Regional Transportation Plan

Transportation Modeling Scenarios

DRAFT Working Paper

Maricopa Association of Governments

April 8, 2003

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APPENDICES

PURPOSE

The purpose of this working paper is to describe the regional transportation system modeling scenarios that will be analyzed in the development of the MAG Regional Transportation Plan (RTP). These scenarios will be evaluated to help provide insights into the tradeoffs associated with different transportation investment strategies and how different plan components perform. Based on the assessment of the scenarios, a hybrid modeling scenario will be developed and analyzed.

In addition to a description of the scenarios, this working paper provides background information on the procedures that will be applied in the analysis of the scenarios. This includes evaluation methodologies, regional goals, objectives and performance measures, and revenue assumptions.

MAG REGIONAL TRANSPORTATION PLAN

Under the direction of the Transportation Policy Committee, a new Regional Transportation Plan is being developed for the MAG area. This Plan will provide a blueprint for future transportation investments in the region for the next several decades. The last major update of the RTP occurred during the mid-1980s. The new RTP will include all modes of transportation and will be based on adopted goals, objectives, and strategies for the future. It is also important to note that the current county-wide, one-half cent sales tax for transportation, which has been crucial in meeting regional transportation needs, will end on December 31, 2005. A new Plan is needed to guide transportation investment decisions for new revenue sources that support the continued development of the transportation system in the region.

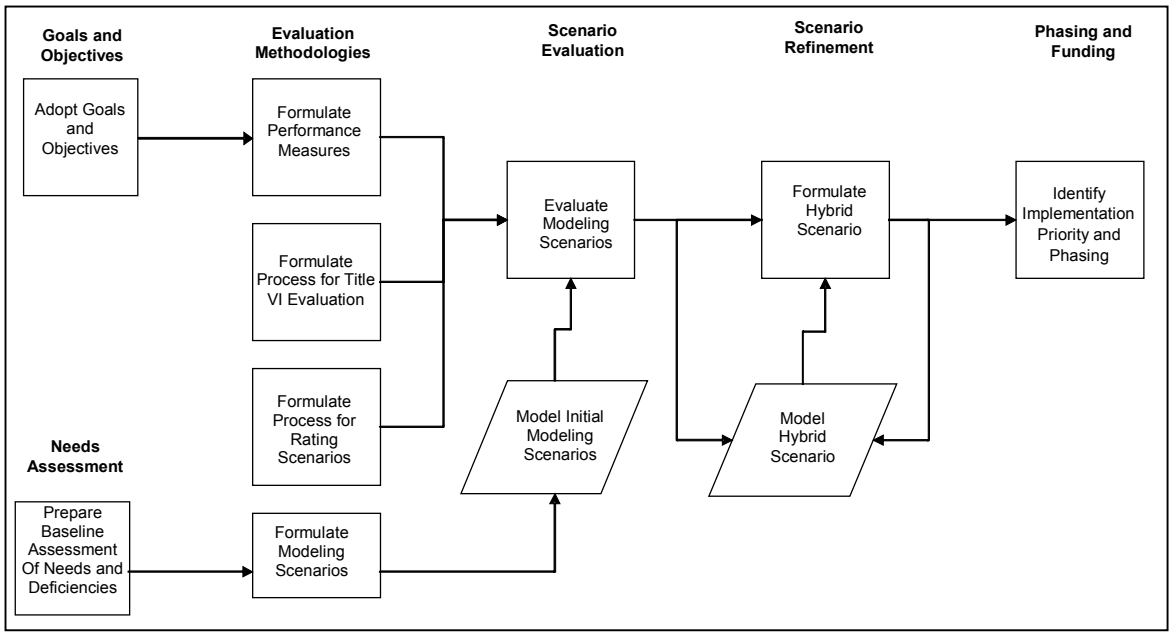
The RTP is being developed through a detailed, comprehensive process that focuses on performance based planning. This includes the development of a solid policy foundation for future transportation infrastructure decisions. The RTP process has examined future economic and demographic trends, current and future transportation conditions, and potential technology and other factors that could influence transportation demand and how transportation services are provided. In addition, an extensive outreach program is being conducted to obtain public input regarding current transportation concerns and how to address future transportation issues. These efforts have led to the identification of a set of regional transportation goals and objectives to guide the development of the RTP.

In addition to policy issues, the RTP process is also identifying and prioritizing specific transportation projects and programs to address future transportation needs in the region. This effort is considering information and recommendations from a number of background studies that have been conducted for the RTP, including three area transportation studies, corridor studies, a regional freeway bottleneck study, a high capacity transit study, a regional transit study, a high occupancy vehicle lane study, a park-and-ride lot study, and others as appropriate.

EVALUATION AND PHASING PROCESS

The evaluation and phasing process that is being used in the preparation of the RTP is depicted in Exhibit 1. This approach is distinguished by the use of performance-based planning and the application of performance measures in the evaluation of the modeling scenarios. The methodology includes six major components: 1) goals and objectives, 2) needs assessment, 3) evaluation methodologies, 4) scenario evaluation, 5) scenario refinement, and 6) phasing and funding.

Exhibit 1
Evaluation and Phasing Process



Goals and Objectives

Regional Transportation Plan goals and objectives have been developed. These goals and objectives provide the structure for developing options and evaluating scenarios. Performance measures have also been identified and linked with specific goals and objectives, so that the evaluation process reflects key regional issues and concerns. (See Appendix D for a complete listing of goals, objectives and performance measures.)

Needs Assessment

A series of background studies have been conducted for the RTP, including area transportation studies, corridor assessments, and modal specific analyses, as well as other regional planning studies. Transportation needs and deficiencies identified in these studies will be assessed as part of the RTP process. In addition, an assessment will be made on a system consisting of existing and committed projects tested against the 2025 population and employment forecasts for the region. These assessments will be used to help identify the specific issues that need to be addressed by RTP investments.

Evaluation Methodologies

The methodology for assessing system performance and evaluating scenarios will utilize a set of performance measures. The performance measures will be used to provide information regarding the advantages and disadvantages of various approaches to meeting future travel demand needs and assess the relative strengths and weaknesses of the modeling scenarios. This will be done within the overall context of regional transportation goals and objectives. As part of the overall evaluation framework, procedures for the assessment of Title VI and Environmental Justice considerations will also be included.

Modeling Scenario Evaluation/Refinement

Each of the scenarios will be evaluated using the performance measures and methodologies. With the results of the evaluations, a hybrid modeling scenario will be defined. This will then be modeled, evaluated and refined. The development of this "preferred" modeling scenario will provide the basis for a plan for adoption.

Phasing and Funding

Once a final "preferred" modeling scenario has been established, it will be further defined in terms of elements for implementation and phasing, including potential funding mixes. The phasing of these elements will consider a range of both quantitative and qualitative factors. Potential factors could include: 1) contribution to system performance, 2) system compatibility/connectivity, 3) funding potential, 4) public support, 5) contribution to air quality, and 6) project readiness.

REGIONAL TRANSPORTATION REVENUES

The magnitude and sources of future regional transportation revenues are important considerations in the development and evaluation of transportation system modeling scenarios. The funding sources being addressed include: 1) ADOT 15 % funds, 2) ADOT discretionary funds, 3) federal transit 5307 funds, 4) federal transit 5309 funds, 5) federal surface transportation funds (STP), and 6) federal congestion mitigation and air quality funds (CMAQ), and 7) extension of the county-wide half-cent sales tax for transportation. The modeling scenarios developed for the RTP process have been constrained to reflect specific levels of future funding from these sources for the 20-year period covering 2006-2025. A total of $17.1 billion (in 2002 dollars) has been projected to be available from these regional revenue sources for the 20-year period. All forecasts of revenues will be in 2002 dollars to be consistent with cost estimates, which also will be in terms of 2002 dollars.

Exhibit 2 summarizes estimated future revenues from regional transportation sources (in 2002 dollars) and the types of projects to which they may be applied. It is important to note that these estimates are preliminary and may likely be revised downward, as revenue estimates are refined. In addition, two other factors that will effectively reduce revenue availability are financing costs and cost estimate contingencies. These factors may be substantial and will be accounted for during the development of the hybrid scenario.

Exhibit 2

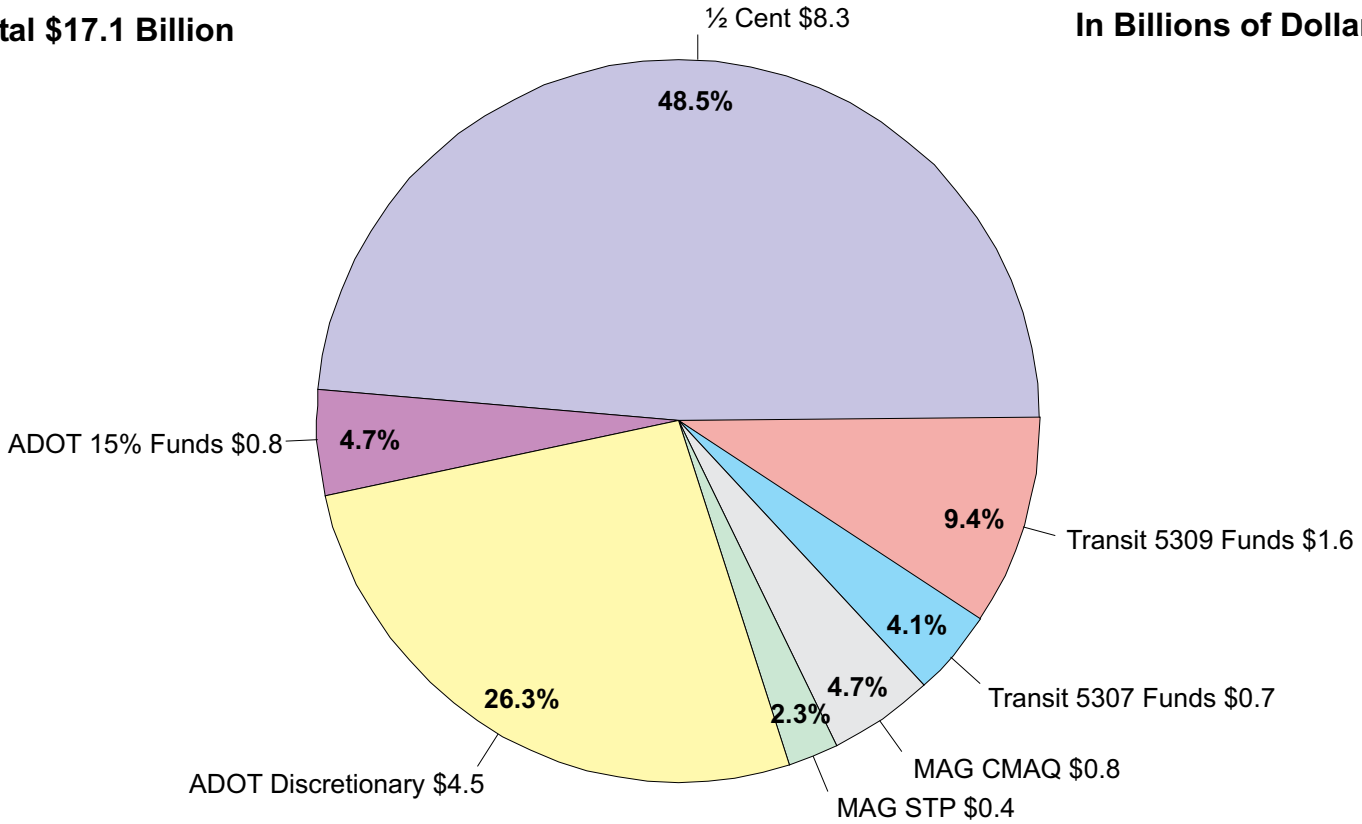
Major Regional Revenue Sources (2006-2025)*

REGIONAL TRANSPORTATION PLAN
MARICOPA ASSOCIATION of GOVERNMENTS

½ Cent Sales Tax Extension	ADOT 15% Funds - Legislated - Board Policy	ADOT Discretionary Funds - Federal - State	Phoenix/ RPTA Federal Sub-allocated 5307 Funds	Phoenix/ RPTA Federal Discretionary 5309 Funds	MAG Federal Sub-allocated Surface Transportation Funds (STP)	MAG Federal Congestion Mitigation Air Quality Funds (CMAQ)
Sales Tax **$8.3 Billion**	Gas Tax **$0.8 Billion**	Gas Tax **$4.5 Billion**	**$0.7 Billion**	(Requested) **$1.6 Billion**	**$0.4 Billion**	**$0.8 Billion**
◆ Highways ◆ Arterial Streets ◆ Transit	◆ Controlled Access State Highways	◆ State Highway Improvements	◆ Bus - Capital	◆ Light Rail - Capital ◆ Bus - Capital	◆ Streets and Highways ◆ Transit - Capital	◆ Air Quality and Congestion Relief Projects ◆ Transit - Capital

Total $17.1 Billion

In Billions of Dollars



*** Preliminary Estimate (3/12/03)**

As shown in Exhibit 2, based on federal and state statutory requirements, approximately 31 percent of the projected regional funding is dedicated to highway projects (ADOT 15% and discretionary), 13 percent to transit projects (federal 5307 and 5309), and 7 percent to projects that may be on either system (federal STP and CMAQ). The remaining 49 percent of the projected funding is represented by possible extension of the one-half cent sales tax. Pending the outcome of the RTP, this source could be applied to a broad variety of transportation investments. The individual regional transportation revenue sources are described in greater detail below.

While regional transportation revenues are the primary focus of the RTP process, it is important to note that local funding also plays a vital role in meeting transportation needs. These sources are also briefly discussed below.

ADOT 15% Funds

State statues require that 12.6 percent of ADOT's share of the Arizona Highway User Revenue Fund (HURF) be allocated to urban controlled access roads in the MAG and PAG areas. In addition, the State Transportation Board has allocated another 2.6 percent for a total of 15.2 percent (15 % Funds). Of this amount, 75 percent is allocated to the MAG area for the MAG Regional Freeway System. A portion of the 15% Funds for the MAG area is already allocated to the completion of the regional freeway program and to the repayment of bonds. The remainder, approximately $0.8 billion over the 20-year planning period, is available for additional regional freeway projects on the State Highway System in the MAG area.

ADOT Discretionary Funds

ADOT discretionary funds include the HURF funds allocated to ADOT to support the State Highway System, ADOT Federal Aid Highway Funds, and other miscellaneous sources. A significant portion of the ADOT HURF funds, specified by the legislature as part of the state budgeting process, are used to pay for maintenance, operations and other road related expenses. Of the funds remaining for construction, 37 percent have generally been targeted to the MAG area. Over the 20-year planning horizon, this source is expected to generate $4.5 billion for construction on state highways, including freeways and other state highways, in the MAG area.

Federal Transit 5307 Funds

These Federal Transit formula grants are available to large urban areas to fund bus purchases and other transit development. Purchases made under this program must include 20 percent local match. Over the 20-year planning horizon this source is expected to generate $0.7 billion for transit development.

Federal Transit 5309 Funds

These funds are available through discretionary grants from the Federal Transit Administration (FTA) and applications are on a competitive basis. They include grants

for bus transit development and "new starts" of light-rail (LRT) and other high capacity systems. Bus transit development requires a 20 percent local match while new starts are expected to require a 50 percent local match. These funds are granted at the discretion of the FTA. Over the 20-year planning horizon, it is estimated that $1.0 billion in 5309 funds for bus and rail transit projects will be made available to the MAG region from the FTA. The $1.0 billion represents an annual funding level of approximately $80 million for the 20-year period, minus $600 million in funding expected to be applied to LRT 20-mile minimum-operating-system, which is now being implemented.

Federal Surface Transportation Program (STP) Funds

These are the most flexible Federal Transportation funds and may be used for highways or transit. Some of these funds are dedicated to repayment of bonds issued to achieve accelerated completion of the regional freeway system program. Net of these obligations, $0.4 billion, will be available from STP funds for highway and transit projects during the planning period.

Federal Congestion Mitigation and Air Quality Funds

These federal funds are available for projects that improve air quality in areas that do not meet clean air standards ("non-attainment" areas). Projects may include a wide variety of highway, transit and alternate mode projects that contribute to improved air quality. While they are allocated to the state, Arizona's funds have been dedicated entirely to the MAG area. They are projected to generate $0.8 billion over the life of the plan.

Extension of One-Half Cent Sales Tax for Transportation

The current half-cent sales tax goes almost entirely to the regional freeway system. A renewed sales tax may be available for a variety of uses including arterials, rail transit and bus expansion, as well as freeways. If renewed, this source is projected to generate an additional $8.3 billion for transportation between 2006 and 2025.

Local Contributions

Local contributions are used to assist transit operations and development of new services. This includes fare recovery, LTAF, local sales tax, general fund contributions and other minor local sources. In 2002, operating and maintenance costs for the fixed route bus service was $165,068,638 of which $160,596,065 or 97 percent was derived from local sources.

Other local funding sources are the city and county shares of the Arizona Highway User Revenue Fund (HURF), which must be used for highway transportation purposes. It is projected that cities and the county in the MAG area will receive approximately $6.9 billion in HURF revenues during 2006 - 2025, for expenditures on street and highway programs within their jurisdictions. In addition, a portion of local sales taxes and general funds, as well as developer financed street construction, contribute to roadway development in the region.

SUMMARY OF MODELING SCENARIOS

The Regional Transportation Plan process includes the development of transportation system modeling scenarios that will be evaluated using performance measures. The analysis of the scenarios will provide insights into the tradeoffs associated with different transportation investment strategies and the performance of system components. Based on this analysis, a hybrid scenario will be developed and evaluated to provide the basis for a plan for adoption.

Three scenarios have been identified for evaluation. The scenarios have been structured generally to reflect the estimated levels of future funding and project eligibility, described in the section on regional transportation revenues. As noted in that discussion, a number of statutory requirements direct funding to specific transportation modes. This fact is reflected in the way in which the transportation system scenarios have been structured. However, it is important to note that the primary goal of the scenarios is to provide a basis for analyzing the performance of potential plan components, rather than to provide a detailed allocation of funding resources. Therefore, the total dollars for each scenario varies and may not correspond exactly to the preliminary estimate of revenues. However, each scenario totals in the range of $17.1 billion in regional funding.

Exhibit 3 presents a broad comparison of the scenarios in terms of the level of investment of regional revenue sources by major modal category. These categories include freeways, major arterial streets, transit and other regional programs. As may be observed, Scenario A places an emphasis on investments in freeways, Scenario B shifts resources toward major arterial streets, and Scenario C has the highest level of investment in transit. Exhibit 4 provides a more detailed breakdown of the regional funding in each of the scenarios. In the discussion of the individual scenarios that follows, a further detailing of funding sources, including local contributions, is provided.

Exhibit 3
Modeling Scenarios Summary – Regional Funding
(Millions of 2002 Dollars)

	Scenario A	**Scenario B**	**Scenario C**
Freeways	$11,049	$8,906	$6,450
Major Arterial Streets	$1,600	$3,701	$1,600
Transit	$3,984	$4,207	$8,384
Other Regional Programs	$602	$602	$602
Total	**$17,235**	**$17,236**	**$17,036**

Exhibit 4
Modeling Scenario Summary-
Regional Funding by Project Type
(millions of 2002 dollars)

Ref. #	Project Type	Scenario A Regional Funding (millions)	Scenario B Regional Funding (millions)	Scenario C Regional Funding (millions)
FREEWAYS		**$11,049**	**$8,906**	**$6,450**
A-1	**New Freeway Corridors**	**$5,420**	**$4,130**	**$3,000**
	Widening	**$1,532**	**$898**	**$2,430**
A-2	New General Purpose Lanes	$1,532	$0	$1,532
A-3	New HOV Lanes	$0	$898	$898
	Interchanges	**$177**	**$576**	**$576**
A-4	New Service Interchanges	$88	$0	$0
A-5	Service Interchange Improvements	$89	$0	$0
A-6	New Service Interchange HOV Ramps	$0	$265	$265
A-7	New System Interchange HOV Ramps	$0	$311	$311
A-8	**Bottleneck Improvements**	**$2,990**	**$2,622**	**$0**
A-9	**Maintenance**	**$480**	**$480**	**$444**
A-10	**Mitigation**	**$200**	**$200**	**$0**
A-11	**FMS/ITS**	**$250**	**$0**	**$0**
MAJOR ARTERIAL STREETS		**$1,600**	**$3,701**	**$1,600**
B	**Arterial Roadway Corridors**	**$0**	**$2,101**	**$0**
C	**Regional Arterial Grid**	**$1,600**	**$1,600**	**$1,600**
TRANSIT		**$3,984**	**$4,027**	**$8,384**
Regional Bus Grid		***$2,179***	***$2,179***	***$3,626***
	Fixed Route	**$1,389**	**$1,389**	**$2,518**
D-1	Capital	$629	$629	$1,040
D-2	Operating	$760	$760	$1,478
	Circulator/Shuttle	**$241**	**$241**	**$238**
D-3	Capital	$104	$104	$102
D-4	Operating	$137	$137	$136
	Rural Transit	**$75**	**$75**	**$151**
D-5	Capital	$47	$47	$48
D-6	Operating	$28	$28	$103
	ADA Paratransit	**$99**	**$99**	**$109**
D-7	Capital	$40	$40	$48
D-8	Operating	$59	$59	$61
	Elderly Paratransit	**$121**	**$121**	**$125**
D-9	Capital	$43	$43	$54
D-10	Operating	$78	$78	$71
D-11	**ITS/VMS**	**$72**	**$72**	**$140**
D-12	**O&M Facilities/Transit Centers/Park-and-Ride**	**$182**	**$182**	**$345**
Express/BRT Bus		***$929***	***$972***	***$822***
	Express/BRT Freeway	**$410**	**$437**	**$194**
E-1	Capital	$86	$92	$104
E-2	Operating	$324	$345	$90
	Skip-Stop Service	**$467**	**$483**	**$418**
E-3	Capital	$86	$102	$178
E-4	Operating	$381	$381	$240
E-5	**ITS/VMS**	**$10**	**$10**	**$80**
E-6	**O&M Facilities/Transit Centers/Park-and-Ride**	**$42**	**$42**	**$130**
Enhanced BRT/LRT		***$0***	***$0***	***$2,911***
	Enhanced BRT/LRT	**$0**	**$0**	**$2,511**
F-1	Capital	$0	$0	$1,391
F-2	Operating	$0	$0	$1,120
F-3	**ITS/VMS**	**$0**	**$0**	**$59**
F-4	**O&M Facilities/Transit Centers/Park-and-Ride**	**$0**	**$0**	**$341**
Light Rail		***$876***	***$876***	***$876***
	Minimum Operating System (MOS)	**$589**	**$589**	**$589**
G-1	Capital	$589	$589	$589
G-2	Operating	$0	$0	$0
	MOS Extensions	**$225**	**$225**	**$225**
G-3	Capital	$225	$225	$225
G-4	Operating	$0	$0	$0
G-5	**ITS/VMS**	**$27**	**$27**	**$27**
G-6	**O&M Facilities/Transit Centers/Park-and-Ride**	**$35**	**$35**	**$35**
Commuter Rail		***$0***	***$0***	***$149***
	New Corridors	**$0**	**$0**	**$122**
H-1	Capital	$0	$0	$94
H-2	Operating	$0	$0	$28
H-3	**ITS**	**$0**	**$0**	**$3**
H-4	**O&M Facilities/Transit Centers/Park-and-Ride**	**$0**	**$0**	**$24**
OTHER REGIONAL PROGRAMS		**$602**	**$602**	**$602**
I-1	**Bike/Pedestrian**	**$120**	**$120**	**$120**
I-2	**Vanpool**	**$144**	**$144**	**$144**
I-3	**Rideshare/Transportation Demand Management**	**$98**	**$98**	**$98**
I-4	**Air Quality/Mitigation**	**$160**	**$160**	**$160**
I-5	**Regional Arterial ITS**	**$80**	**$80**	**$80**
		$17,235	***$17,236***	***$17,036***

The three scenarios are described further below. This includes a summary spreadsheet for each scenario, listing specific components within the major modal areas. In an effort to provide a complete picture of operating costs related to transit projects and possible matching funds for certain project types, these spreadsheets also indicate the local contribution associated with each program area.

For purposes of developing the scenarios, an across-the-board 20 percent local match requirement for transit capital (except for the MOS) was assumed. In addition, to develop local contribution figures, the following assumptions were made regarding revenues from the half-cent sales tax:

- Current local contribution for bus services, adjusted for population growth, would continue during the 20-year period
- No funding would be applied to the LRT 20-mile, minimum operating system, or the 10 miles of extensions currently being considered, for either capital or operating expenses.
- No local match requirement for new regional transit service operating costs for express bus, BRT, or LRT.
- 50 percent local match requirement for expanded local bus (regional grid) service operating costs.
- No local match requirement for freeway projects.
- 50 percent local match requirement for new traffic interchanges.
- 20 percent local match requirement for major arterial street projects.

Scenario "A"

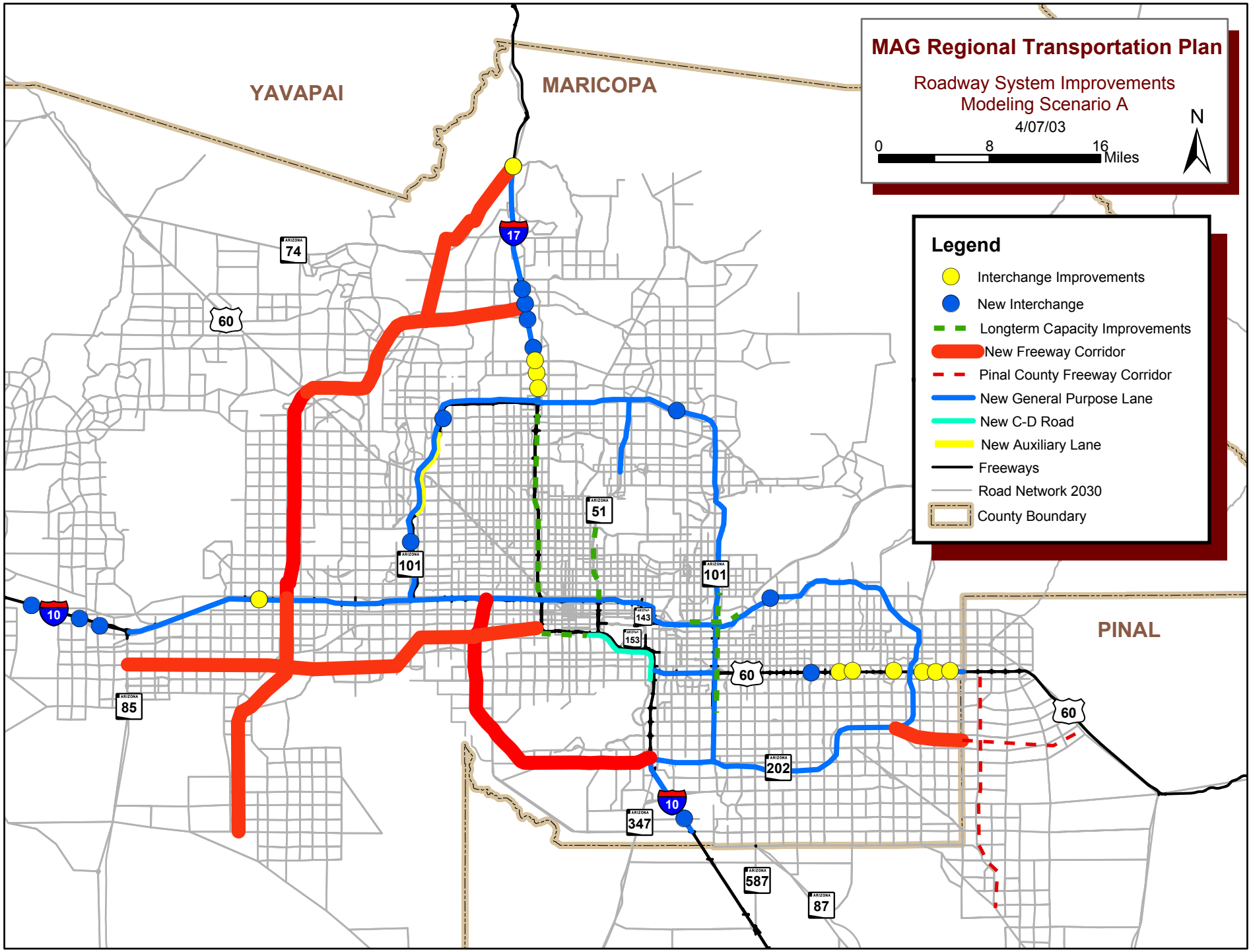
Exhibit 5 indicates how the regional revenues, along with corresponding local contributions, are distributed among the various components of Scenario "A". A detailed listing of the projects included under each component is provided in Appendix A. These project listings are referenced according to the numbers shown in the left-hand column of Exhibit 5.

Freeways: In Scenario "A", there is an emphasis on new freeways and freeway improvements. All of the new freeway corridors currently under discussion are included, as well as Loop 303 and the South Mountain Corridor. The freeway corridors include: 1) Loop 303 from MC 85 to I-17, 2) Loop 202 from I-10/west to I-10/east, 3) extension of Loop 303 from MC 85 to Riggs Road, 4) I-10 Reliever from I-17 to SR 85, 5) Williams/Gateway Freeway from Loop 202 to Meridian Road, and 6) New River Corridor from Loop 303 to I-17. In addition to the new freeway corridors, new general purpose lane capacity is provided along most existing and soon-to-be-completed freeways. However, no additional HOV lanes or ramps are included. A series of freeway bottleneck improvement projects and arterial/freeway interchanges are provided. A significant block of funding is identified for freeway maintenance and operations. Exhibit 6 maps the locations of the freeway projects included in Scenario "A".

Exhibit 5
Modeling Scenario A-
Funding by Project Type
(millions of 2002 dollars)

Ref. #	Project Type	Regional Funding (millions) (1)	Local Contribution (4) (6)	Total Program
FREEWAYS		**$11,049**	**$88**	**$11,137**
A-1	**New Freeway Corridors**	**$5,420**	**$0**	**$5,420**
	Widening	**$1,532**	**$0**	**$1,532**
A-2	New General Purpose Lanes	$1,532	$0	$1,532
A-3	New HOV Lanes	$0	$0	$0
	Interchanges	**$177**	**$88**	**$265**
A-4	New Service Interchanges (3)	$88	$88	$176
A-5	Service Interchange Improvements	$89	$0	$89
A-6	New Service Interchange HOV Ramps	$0	$0	$0
A-7	New System Interchange HOV Ramps	$0	$0	$0
A-8	**Bottleneck Improvements**	**$2,990**	**$0**	**$2,990**
A-9	**Maintenance**	**$480**	**$0**	**$480**
A-10	**Mitigation**	**$200**	**$0**	**$200**
A-11	**FMS/ITS**	**$250**	**$0**	**$250**
MAJOR ARTERIAL STREETS		**$1,600**	**$400**	**$2,000**
B	**Arterial Roadway Corridors**	**$0**	**$0**	**$0**
C	**Regional Arterial Grid (2)**	**$1,600**	**$400**	**$2,000**
TRANSIT		**$3,984**	**$3,676**	**$7,660**
Regional Bus Grid		***$2,179***	***$2,221***	***$4,400***
	Fixed Route	**$1,389**	**$1,566**	**$2,955**
D-1	Capital (2)	$629	$157	$786
D-2	Operating	$760	$1,409	$2,169
	Circulator/Shuttle	**$241**	**$279**	**$520**
D-3	Capital (2)	$104	$26	$130
D-4	Operating	$137	$253	$390
	Rural Transit	**$75**	**$38**	**$113**
D-5	Capital (2)	$47	$11	$58
D-6	Operating	$28	$27	$55
	ADA Paratransit	**$99**	**$119**	**$218**
D-7	Capital(2)	$40	$10	$50
D-8	Operating	$59	$109	$168
	Elderly Paratransit	**$121**	**$156**	**$277**
D-9	Capital (2)	$43	$10	$53
D-10	Operating	$78	$146	$224
D-11	**ITS/VMS (2)**	**$72**	**$18**	**$90**
D-12	**O&M Facilities/Transit Centers/Park-and-Ride (2)**	**$182**	**$45**	**$227**
Express/BRT Bus		***$929***	***$55***	***$984***
	Express/BRT Freeway	**$410**	**$22**	**$432**
E-1	Capital (2)	$86	$22	$108
E-2	Operating	$324	$0	$324
	Skip-Stop Service	**$467**	**$21**	**$488**
E-3	Capital (2)	$86	$21	$107
E-4	Operating	$381	$0	$381
E-5	**ITS/VMS (2)**	**$10**	**$2**	**$12**
E-6	**O&M Facilities/Transit Centers/Park-and-Ride (2)**	**$42**	**$10**	**$52**
Enhanced BRT/LRT		***$0***	***$0***	***$0***
	Enhanced BRT/LRT	**$0**	**$0**	**$0**
F-1	Capital	$0	$0	$0
F-2	Operating	$0	$0	$0
F-3	**ITS/VMS**	**$0**	**$0**	**$0**
F-4	**O&M Facilities/Transit Centers/Park-and-Ride**	**$0**	**$0**	**$0**
Light Rail		***$876***	***$1,400***	***$2,276***
	Minimum Operating System (MOS)	**$589**	**$1,039**	**$1,628**
G-1	Capital (3)	$589	$589	$1,178
G-2	Operating	$0	$450	$450
	MOS Extensions (5)	**$225**	**$345**	**$570**
G-3	Capital (3)	$225	$225	$450
G-4	Operating	$0	$120	$120
G-5	**ITS/VMS (2)**	**$27**	**$7**	**$34**
G-6	**O&M Facilities/Transit Centers/Park-and-Ride (2)**	**$35**	**$9**	**$44**
OTHER REGIONAL PROGRAMS		**$602**	**$150**	**$752**
I-1	**Bike/Pedestrian (2)**	**$120**	**$30**	**$150**
I-2	**Vanpool (2)**	**$144**	**$36**	**$180**
I-3	**Rideshare/Transportation Demand Management (2)**	**$98**	**$24**	**$122**
I-4	**Air Quality/Mitigation (2)**	**$160**	**$40**	**$200**
I-5	**Regional Arterial ITS (2)**	**$80**	**$20**	**$100**
		$17,235	***$4,314***	***$21,549***

(1) All regional sources including 1/2 cent extension, ADOT 15%, ADOT Discretionary, FTA 5307, FTA 5309, STP, and CMAQ
(2) Assumes a 20 percent local contribution
(3) Assumes a 50 percent local contribution
(4) Local contribution includes fare recovery, LTAF, Local Sales Tax, General Fund Contributions, advertising, etc.
(5) Assumes 10 miles of line extensions.
(8) Assumes current local contribution adjusted for population growth for base service. The 1/2 cent extension assumes 50 percent local match for expanded regional bus grid operating costs with no funding for capital or operating expenses applied to LRT MOS or 10-mile extension. In addition, no local match requirement for new regional transit service operating cost (Express bus, BRT, LRT) was assumed.



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Major Arterial Streets: A block of funding totalling $1.6 billion, labelled regional arterial grid, has been provided for capacity improvements on major arterial streets in each of the scenarios. The arterial system will remain a critical component of the regional transportation system and capacity improvements to that system will be essential to improve traffic flow. In the scenario modeling process, these improvements are represented by arterial widenings identified in the area transportation studies that were conducted as part of the RTP process.

Transit: In Scenario "A", a basic regional bus grid is provided. The current (2002) grid system is depicted in Exhibit 7, while the system represented by Scenario "A" is shown in Exhibit 8**.** The system in Scenario "A" has somewhat greater coverage than the 2002 network and provides approximately 10 percent more bus-miles per person. The fixes route service is accompanied by local circulator/shuttle service, dial-a-ride, some rural transit and required ADA service. In addition, a significant amount of skip-stop service and express/BRT service is included, totalling 17.6 million bus-miles per year. The corridors that would be covered by this service are depicted in Exhibit 9. In Scenario "A", the 20-mile LRT/minimum operating system (MOS) is also included, plus approximately 10 miles of LRT extensions. Only the 20-mile MOS is shown in Exhibit 9. The 10 miles of LRT extensions would fall along one or more of the other corridors in Exhibit 9**,** but the specific location has not yet been determined.

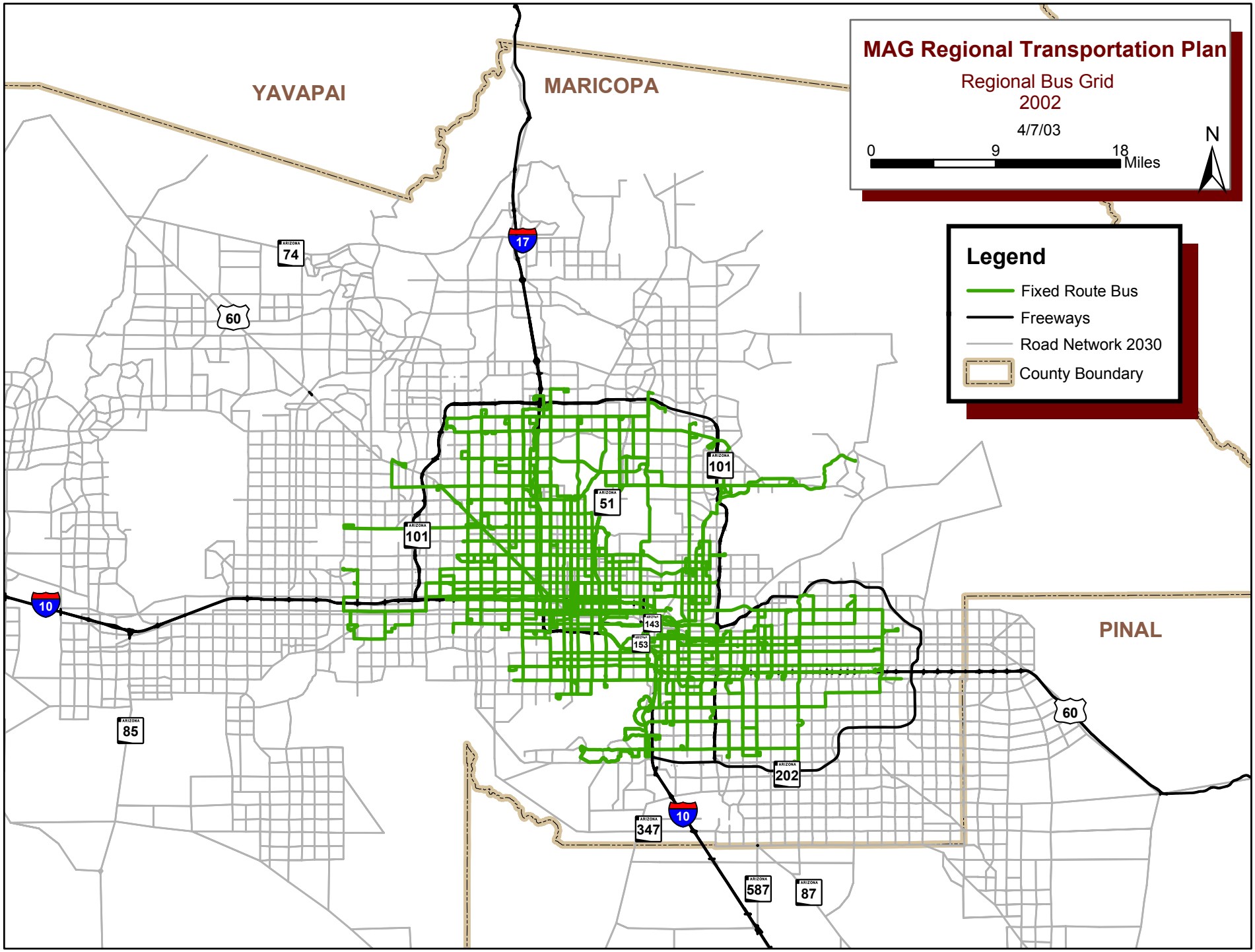
Other Regional Programs: Funding is included in each scenario for other regional programs, such as bicycle pedestrian projects, travel demand management / travel system management projects and air quality/mitigation projects.

Scenario "B"

Exhibit 10 indicates how the regional revenues, along with corresponding local contributions, are distributed among the various components of Scenario "B". A detailed listing of the projects included under each component is provided in Appendix B. These project listings are referenced according to the numbers shown in the left-hand column of Exhibit 10.

Freeways: In Scenario "B", Loop 303 and the South Mountain Corridor are included, but there are fewer new freeways and freeway improvements than Scenario A. In this regard, Scenario "B" does not include: 1) extension of Loop 303 from MC 85 to Riggs Road, 2) I-10 Reliever from I-17 to Loop 202 (including accompanying improvements on I-17), and 3) New River Corridor from Loop 303 to I-17. Freeway bottleneck improvement projects are retained but no new arterial/freeway interchanges are provided. New HOV lanes and HOV interchange ramps are included but no new general purpose lane capacity is added to existing freeways. A block of funding is identified for freeway maintenance and operations. Exhibit 11 maps the location of the freeway projects included in Scenario "B".

Major Arterial Streets: The block of funding totalling $1.6 billion for the regional arterial grid has been included in scenario "B". In addition, in Scenario "B" the major arterial street category has been expanded to include a series of specific projects for



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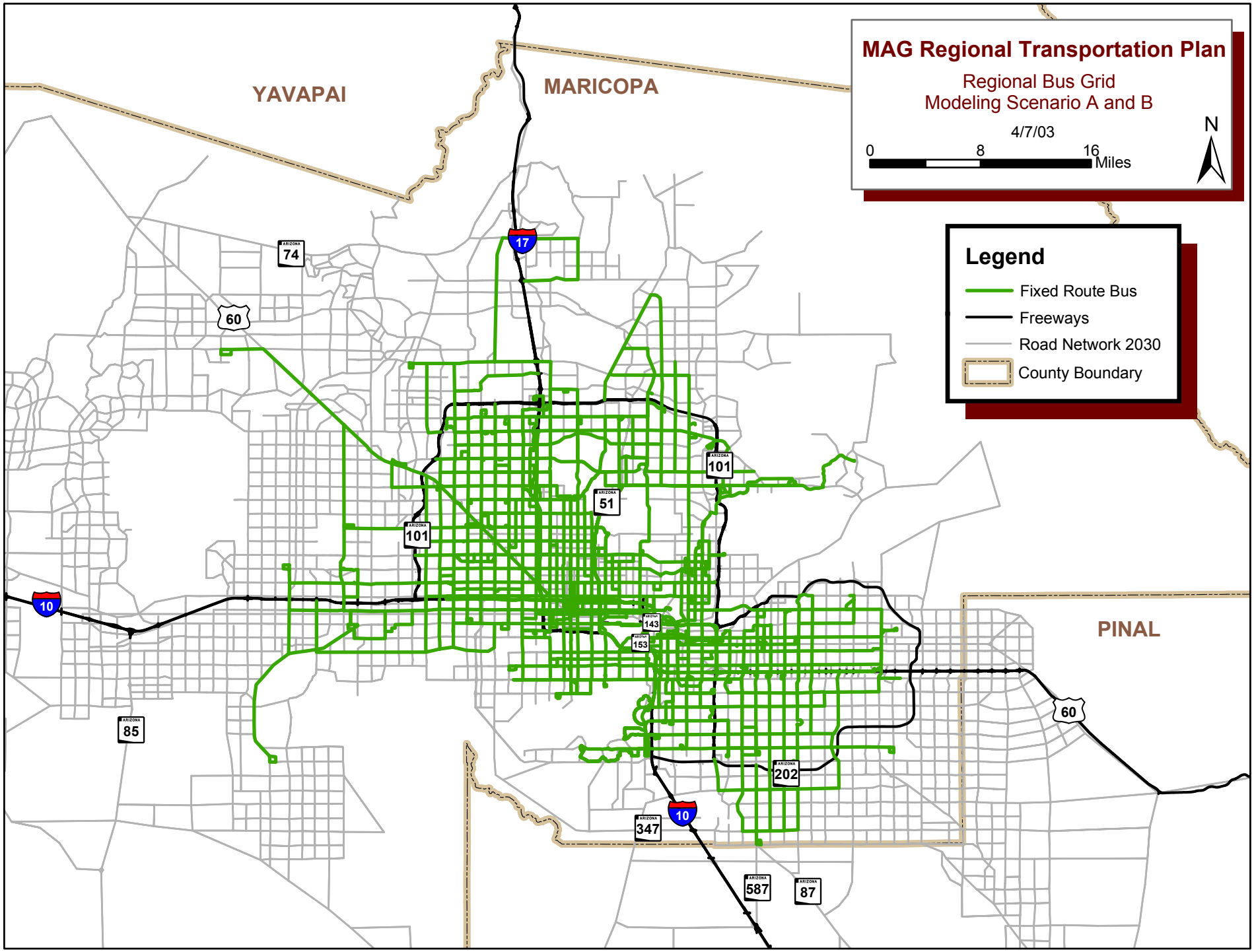

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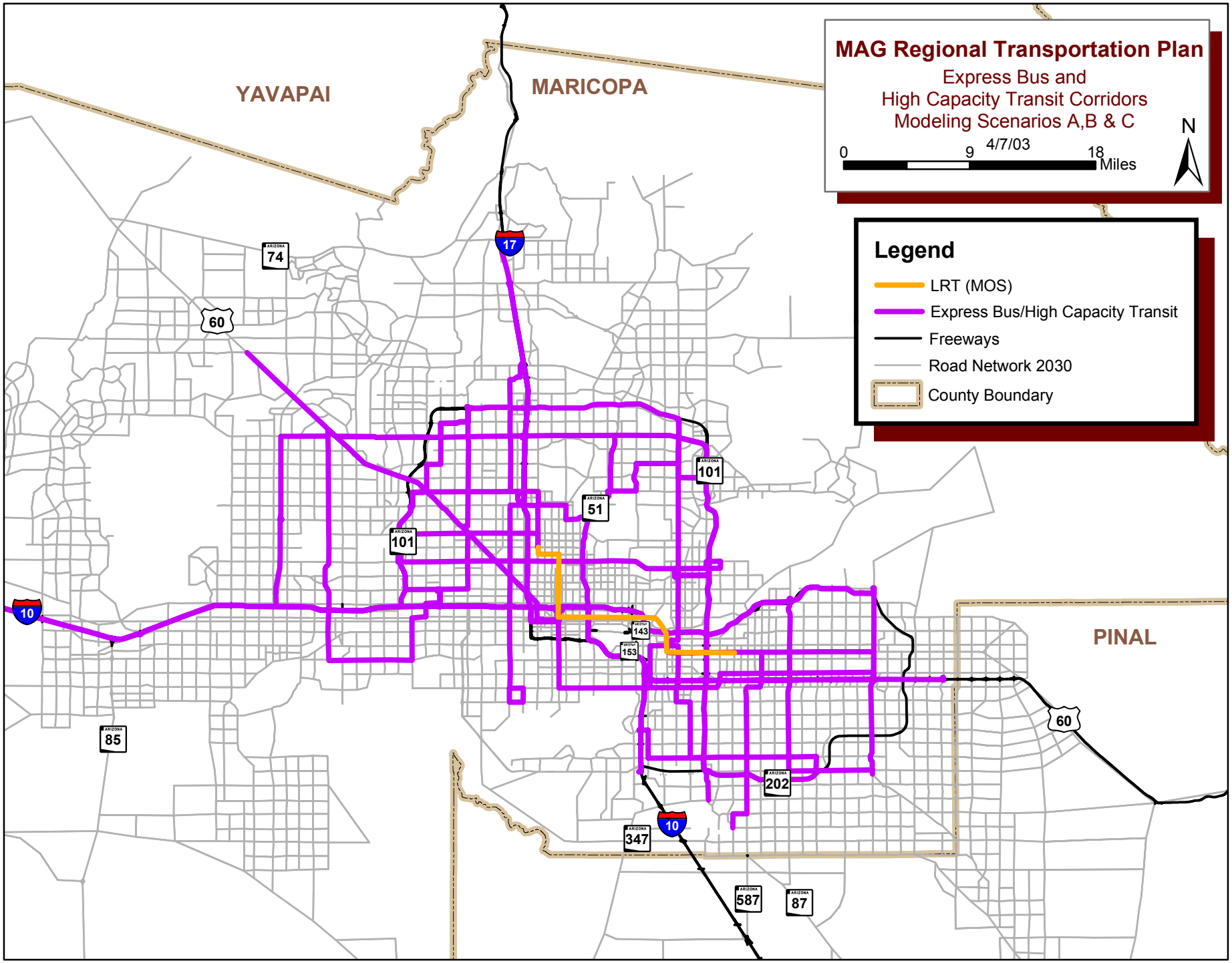
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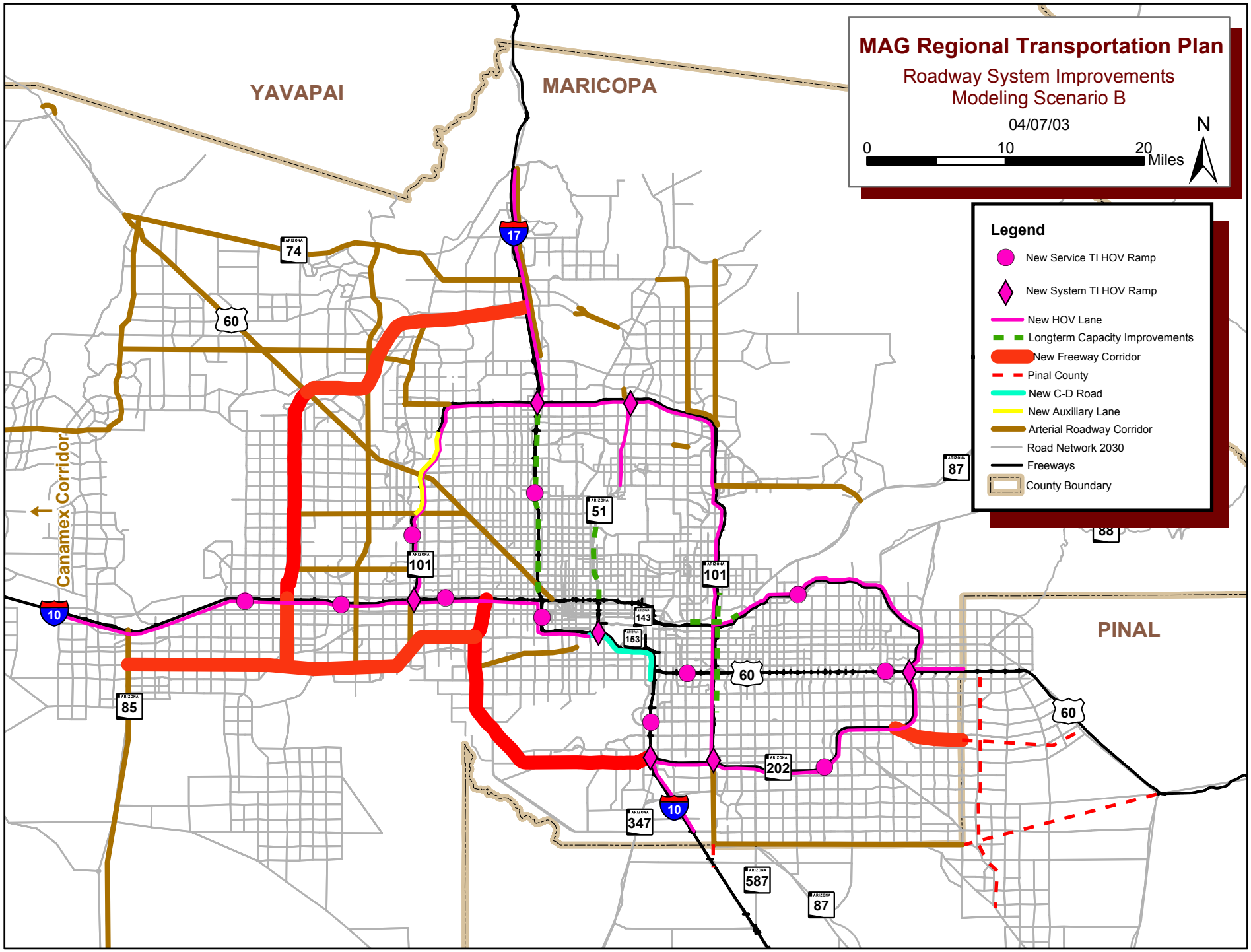
Exhibit 10
Modeling Scenario B-
Funding by Project Type
(millions of 2002 dollars)

Ref. #	Project Type	Regional Funding (millions) (1)	Local Contribution (4)	Total Program
FREEWAYS		**$8,906**	**$0**	**$8,906**
A-1	**New Freeway Corridors**	**$4,130**	**$0**	**$4,130**
	Widening	**$898**	**$0**	**$898**
A-2	New General Purpose Lanes	$0	$0	$0
A-3	New HOV Lanes	$898	$0	$898
	Interchanges	**$576**		**$576**
A-4	New Service Interchanges	$0	$0	$0
A-5	Service Interchange Improvements	$0	$0	$0
A-6	New Service Interchange HOV Ramps	$265	$0	$265
A-7	New System Interchange HOV Ramps	$311	$0	$311
A-8	**Bottleneck Improvements**	**$2,622**	**$0**	**$2,622**
A-9	**Maintenance**	**$480**	**$0**	**$480**
A-10	**Mitigation**	**$200**	**$0**	**$200**
A-11	**FMS/ITS**	**$0**	**$0**	**$0**
MAJOR ARTERIAL STREETS		**$3,701**	**$926**	**$4,627**
B	**Arterial Roadway Corridors**	**$2,101**	**$526**	**$2,627**
C	**Regional Arterial Grid (2)**	**$1,600**	**$400**	**$2,000**
TRANSIT		**$4,027**	**$3,681**	**$7,708**
Regional Bus Grid		***$2,179***	***$2,221***	***$4,400***
	Fixed Route	**$1,389**	**$1,566**	**$2,955**
D-1	Capital (2)	$629	$157	$786
D-2	Operating	$760	$1,409	$2,169
	Circulator/Shuttle	**$241**	**$279**	**$520**
D-3	Capital (2)	$104	$26	$130
D-4	Operating	$137	$253	$390
	Rural Transit	**$75**	**$38**	**$113**
D-5	Capital (2)	$47	$11	$58
D-6	Operating	$28	$27	$55
	ADA Paratransit	**$99**	**$119**	**$218**
D-7	Capital (2)	$40	$10	$50
D-8	Operating	$59	$109	$168
	Elderly Paratransit	**$121**	**$156**	**$277**
D-9	Capital (2)	$43	$10	$53
D-10	Operating	$78	$146	$224
D-11	**ITS/VMS (2)**	**$72**	**$18**	**$90**
D-12	**O&M Facilities/Transit Centers/Park-and-Ride (2)**	**$182**	**$45**	**$227**
Express/BRT Bus		***$972***	***$60***	***$1,032***
	Express/BRT Freeway	**$437**	**$23**	**$460**
E-1	Capital (2)	$92	$23	$115
E-2	Operating	$345	$0	$345
	Skip-Stop Service	**$483**	**$25**	**$508**
E-3	Capital (2)	$102	$25	$127
E-4	Operating	$381	$0	$381
E-5	**ITS/VMS (2)**	**$10**	**$2**	**$12**
E-6	**O&M Facilities/Transit Centers/Park-and-Ride (2)**	**$42**	**$10**	**$52**
Enhanced BRT/LRT		***$0***	***$0***	***$0***
	Enhanced BRT/LRT	**$0**	**$0**	**$0**
F-1	Capital	$0	$0	$0
F-2	Operating	$0	$0	$0
F-3	**ITS/VMS**	**$0**	**$0**	**$0**
F-4	**O&M Facilities/Transit Centers/Park-and-Ride**	**$0**	**$0**	**$0**
Light Rail		***$876***	***$1,400***	***$2,276***
	Minimum Operating System (MOS)	**$589**	**$1,039**	**$1,628**
G-1	Capital (3)	$589	$589	$1,178
G-2	Operating	$0	$450	$450
	MOS Extensions (5)	**$225**	**$345**	**$570**
G-3	Capital (3)	$225	$225	$450
G-4	Operating	$0	$120	$120
G-5	**ITS/VMS (2)**	**$27**	**$7**	**$34**
G-6	**O&M Facilities/Transit Centers/Park-and-Ride (2)**	**$35**	**$9**	**$44**
OTHER REGIONAL PROGRAMS		**$602**	**$150**	**$752**
I-1	**Bike/Pedestrian (2)**	**$120**	**$30**	**$150**
I-2	**Vanpool (2)**	**$144**	**$36**	**$180**
I-3	**Rideshare/Transportation Demand Management (2)**	**$98**	**$24**	**$122**
I-4	**Air Quality/Mitigation (2)**	**$160**	**$40**	**$200**
I-5	**Regional Arterial ITS (2)**	**$80**	**$20**	**$100**
		$17,236	***$4,757***	***$21,993***

(1) All regional sources including 1/2 cent extension, ADOT 15%, ADOT Discretionary, FTA 5307, FTA 5309, STP, and CMAQ
(2) Assumes a 20 percent local contribution
(3) Assumes a 50 percent local contribution
(4) Local contribution includes fare recovery, LTAF, Local Sales Tax, General Fund Contributions, advertising, etc.
(5) Assumes 10 miles of line extensions.
(8) Assumes current local contribution adjusted for population growth for base service. The 1/2 cent extension assumes 50 percent local match for expanded regional bus grid operating costs with no funding for capital or operating expenses applied to LRT MOS or 10-mile extension. In addition, no local match requirement for new regional transit service operating cost (Express bus, BRT, LRT) was assumed.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new/improved arterial roadway corridors. Generally, these projects represent development or improvement of facilities that would have a greater degree of access control than typical arterials. Exhibit 11 depicts the location of the arterial roadway corridor projects included in Scenario "B".

Transit: Transit service under Scenario B is the same as that identified in Scenario A.

Other Regional Programs: As in the other scenarios, funding is included in Scenario "B" for other regional programs, such as bicycle pedestrian projects, travel demand management / travel system management projects and air quality/mitigation projects.

Scenario "C"

Exhibit 12 indicates how the regional revenues, along with corresponding local contributions, are distributed among the various components of Scenario "C". A detailed listing of the projects included under each component is provided in Appendix C. These project listings are referenced according to the numbers shown in the left-hand column of Exhibit 12.

Freeways: In Scenario "C", there are no new freeway corridors, other than Loop 303 and the South Mountain Corridor. The only improvements to existing freeways are additional HOV lanes and HOV interchange ramps, as well as new general purpose lanes on existing facilities. There are no freeway bottleneck improvements. Some funding for freeway maintenance and operations is retained. Exhibit 13 depicts the location of the freeway improvement projects included in Scenario "C".

Major Arterial Streets: The block of funding totalling $1.6 billion for the regional arterial grid has also been included in scenario "C". As in Scenario "A", Scenario "B" does not include any specific projects for new/improved arterial roadway corridors.

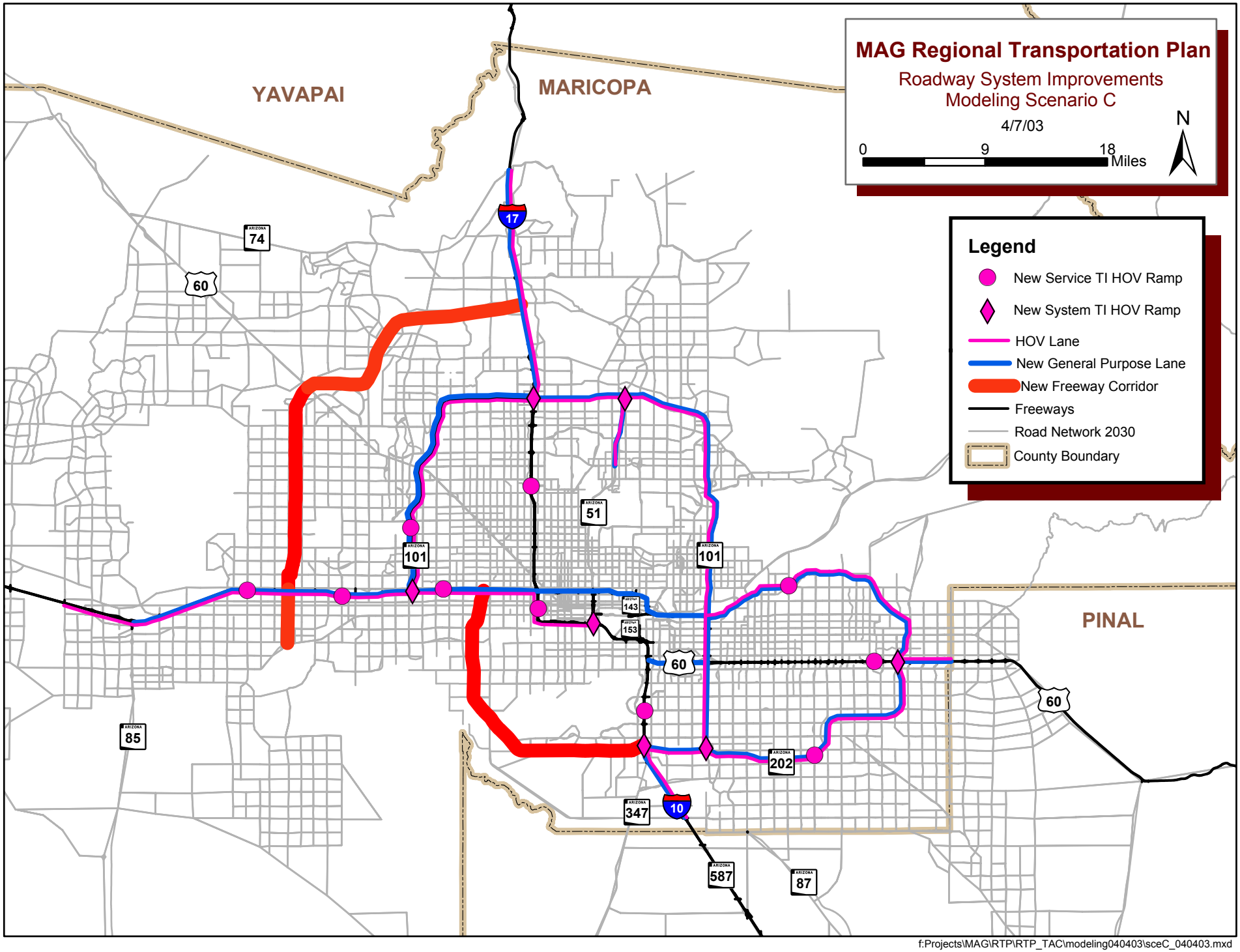
Transit: In this scenario a significantly expanded regional bus grid is provided, representing nearly double the bus-miles included in Scenarios "A" and "B". Scenario "C" provides approximately 80 per cent more annual bus-miles than Scenarios "A" and "B". This is approximately a doubling of the bus-miles provided per person compared to 2002. Exhibit 14 depicts the regional bus grid included in Scenario "C". In Scenario "C", circulator/shuttle, dial-a-ride and ADA services remain at approximately the same levels as in Scenarios A and B, but rural transit is significantly increased. Express/BRT and skip-stop remain about the same, with about 16.5 million annual bus-miles.

Similar to Scenarios "A" and "B", the 20-mile LRT/minimum operating system (MOS) and 10 miles of LRT extensions are included Scenario "C". Only the 20-mile MOS is shown in Exhibit 9. The 10 miles of LRT extensions would fall along one or more of the other corridors in Exhibit 9, but the specific location has not yet been determined. In addition, Scenario "C" includes a major expansion of the high capacity transit component, labelled "Enhanced BRT/LRT". The corridors covered by these additions would also fall within the corridors shown in Exhibit 9. Under this concept, express bus

Exhibit 12
Modeling Scenario C-
Funding by Project Type
(millions of 2002 dollars)

Ref. #	Project Type	Regional Funding (millions) (1)	Local Contribution (4) (8) (9)	Total Program
FREEWAYS		**$6,450**	**$0**	**$6,450**
A-1	**New Freeway Corridors**	**$3,000**	**$0**	**$3,000**
	Widening	**$2,430**	**$0**	**$2,430**
A-2	New General Purpose Lanes	$1,532	$0	$1,532
A-3	New HOV Lanes	$898	$0	$898
	Interchanges	**$576**	**$0**	**$576**
A-4	New Service Interchanges	$0	$0	$0
A-5	Service Interchange Improvements	$0	$0	$0
A-6	New Service Interchange HOV Ramps	$265	$0	$265
A-7	New System Interchange HOV Ramps	$311	$0	$311
A-8	**Bottleneck Improvements**	**$0**	**$0**	**$0**
A-9	**Maintenance**	**$444**	**$0**	**$444**
A-10	**Mitigation**	**$0**	**$0**	**$0**
A-11	**FMS/ITS**	**$0**	**$0**	**$0**
MAJOR ARTERIAL STREETS		**$1,600**	**$400**	**$2,000**
B	**Arterial Roadway Corridors**	**$0**	**$0**	**$0**
C	**Regional Arterial Grid (2)**	**$1,600**	**400**	**$2,000**
TRANSIT		**$8,384**	**$5,272**	**$13,656**
Regional Bus Grid		***$3,626***	***$3,279***	***$6,905***
	Fixed Route	**$2,518**	**$2,466**	**$4,984**
D-1	Capital (2)	$1,040	$260	$1,300
D-2	Operating	$1,478	$2,206	$3,684
	Circulator/Shuttle	**$238**	**$306**	**$544**
D-3	Capital (2)	$102	$36	$138
D-4	Operating	$136	$270	$406
	Rural Transit	**$151**	**$115**	**$266**
D-5	Capital (2)	$48	$12	$60
D-6	Operating	$103	$103	$206
	ADA Paratransit	**$109**	**$125**	**$234**
D-7	Capital (2)	$48	$12	$60
D-8	Operating	$61	$113	$174
	Elderly Paratransit	**$125**	**$146**	**$271**
D-9	Capital (2)	$54	$13	$67
D-10	Operating	$71	$133	$204
D-11	**ITS/VMS (2)**	**$140**	**$35**	**$175**
D-12	**O&M Facilities/Transit Centers/Park-and-Ride (2)**	**$345**	**$86**	**$431**
Express/BRT Bus		***$822***	***$122***	***$944***
	Express/BRT Freeway	**$194**	**$26**	**$220**
E-1	Capital (2)	$104	$26	$130
E-2	Operating	$90	$0	$90
	Skip-Stop Service	**$418**	**$44**	**$462**
E-3	Capital (2)	$178	$44	$222
E-4	Operating	$240	$0	$240
E-5	**ITS/VMS (2)**	**$80**	**$20**	**$100**
E-6	**O&M Facilities/Transit Centers/Park-and-Ride (2)**	**$130**	**$32**	**$162**
Enhanced BRT/LRT		***$2,911***	***$447***	***$3,358***
	Enhanced BRT/LRT (5)	**$2,511**	**$348**	**$2,859**
F-1	Capital (2)	$1,391	$348	$1,739
F-2	Operating	$1,120	$0	$1,120
F-3	**ITS/VMS**	**$59**	**$14**	**$73**
F-4	**O&M Facilities/Transit Centers/Park-and-Ride**	**$341**	**$85**	**$426**
Light Rail		***$876***	***$1,400***	***$2,276***
	Minimum Operating System (MOS)	**$589**	**$1,039**	**$1,628**
G-1	Capital (3)	$589	$589	$1,178
G-2	Operating	$0	$450	$450
	MOS Extensions (6)	**$225**	**$345**	**$570**
G-3	Capital (3)	$225	$225	$450
G-4	Operating	$0	$120	$120
G-5	**ITS/VMS (2)**	**$27**	**$7**	**$34**
G-6	**O&M Facilities/Transit Centers/Park-and-Ride (2)**	**$35**	**$9**	**$44**
Commuter Rail		***$149***	***$24***	***$173***
	New Corridors (7)	**$122**	**$24**	**$146**
H-1	Capital (2)	$94	$24	$118
H-2	Operating	$28	$0	$28
H-3	**ITS**	**$3**	**$0**	**$3**
H-4	**O&M Facilities/Transit Centers/Park-and-Ride**	**$24**	**$0**	**$24**
OTHER REGIONAL PROGRAMS		**$602**	**$150**	**$752**
I-1	**Bike/Pedestrian (2)**	**$120**	**$30**	**$150**
I-2	**Vanpool (2)**	**$144**	**$36**	**$180**
I-3	**Rideshare/Transportation Demand Management (2)**	**$98**	**$24**	**$122**
I-4	**Air Quality/Mitigation (2)**	**$160**	**$40**	**$200**
I-5	**Regional Arterial ITS (2)**	**$80**	**$20**	**$100**
		$17,036	***$5,822***	***$22,858***

(1) All regional sources including 1/2 cent extension, ADOT 15%, ADOT Discretionary, FTA 5307, FTA 5309, STP, and CMAQ
(2) Assumes a 20 percent local contribution
(3) Assumes a 50 percent local contribution
(4) Local contribution includes fare recovery, LTAF, Local Sales Tax, General Fund Contributions, advertising, etc.
(5) Assumes 50 miles of BRT/LRT (23 miles of LRT and 27 miles of BRT, or 30 miles of LRT)
(6) Assumes 10 miles of line extensions off of MOS
(7) Assumes 32 miles of commuter rail
(8) Assumes current local contribution adjusted for population growth for base service. The 1/2 cent extension assumes 50 percent local match for expanded regional bus grid operating costs with no funding for capital or operating expenses applied to LRT MOS or 10-mile extension. In addition, no local match requirement for new regional transit service operating cost (Express bus, BRT, LRT) was assumed.
(9) Approximately one third of the total local contribution represents new local sources.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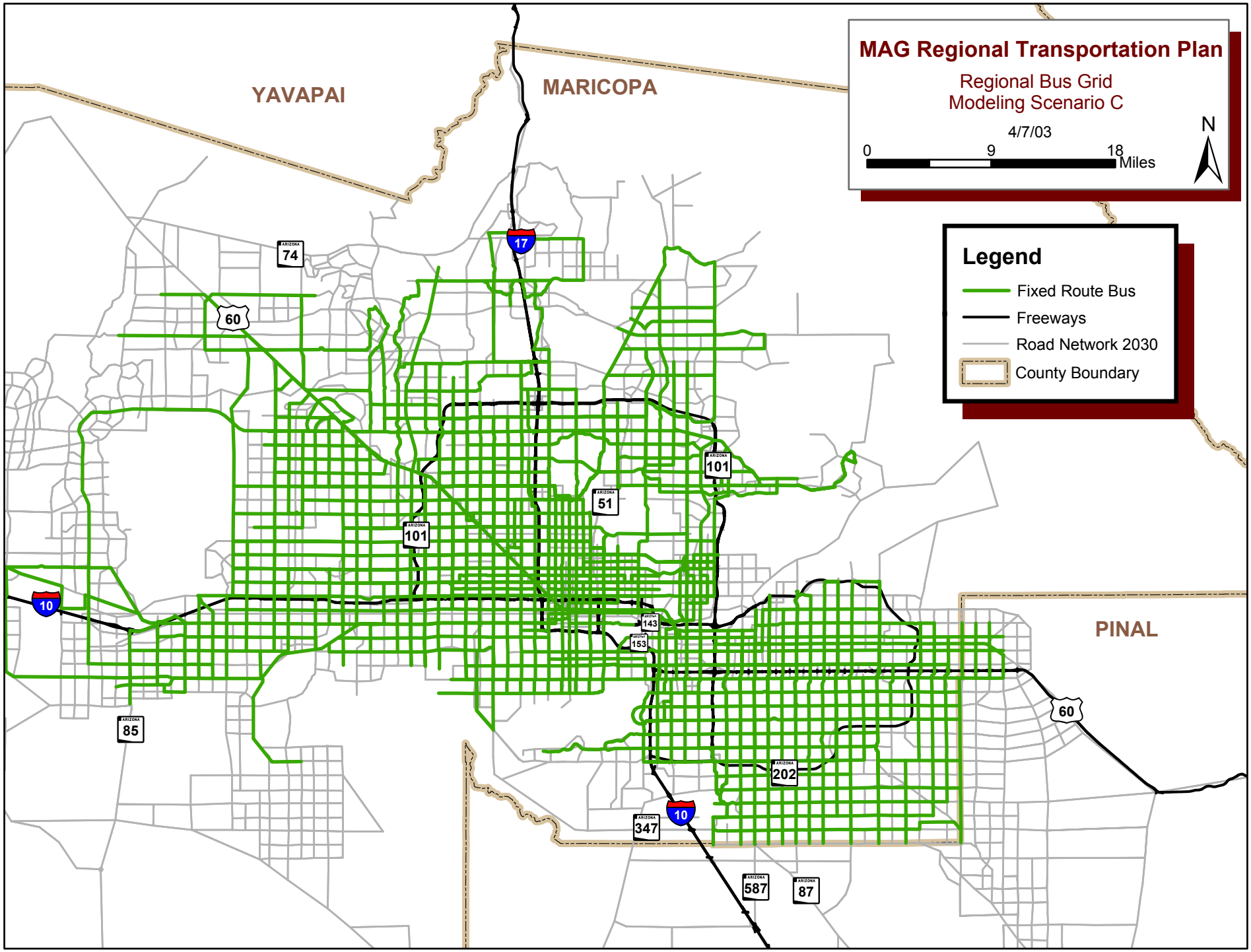

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or skip-stop service in certain corridors would be replaced by the higher level of service provided by LRT or BRT facilities. The specific location and technology of these improvements has not yet been determined and is the subject of ongoing studies. For costing purposes in Scenario "C", it was assumed that 50 miles of BRT/LRT would be added, consisting of 23 miles of LRT and 27 miles of BRT.

In addition to the Enhanced BRT/LRT component, Scenario "C" includes a commuter rail project that would be representative of start-up service on a line not requiring significant refitting for passenger service. In this case, it was assumed that 32 route miles of peak period service would be provided with leased operating rights on a single track with passing sidings. Potential corridors for such service are not indicated on Exhibit 9.

Other Regional Programs: As in the other scenarios, funding is included in Scenario "B" for other regional programs, such as bicycle pedestrian projects, travel demand management / travel system management projects and air quality/mitigation projects.

APPENDIX A

SCENARIO A

PROJECT DESCRIPTIONS

	Regional Cost (Millions)	Total Cost (Millions)
FREEWAYS	***$11,049***	***$11,137***

A-1: New Freeway Corridors

Project Type	*Area*	*Location*	*Limits*	*Description*	*Length (if applicable)*	*Regional Cost (Millions)*	*Total Cost (Millions)*
New freeway facility	PHX	202L	South Mountain Fwy: 202L (Santan Fwy) to I-10	construct new 6 lane freeway + HOV lanes	21 miles	$1,500	$1,500
	WEST	303L	I-17 to MC-85	construct new 6 lane freeway	40 miles	$1,500	$1,500
	WEST	303L	MC-85 to Riggs Road	construct new 6 lane freeway	12 miles	$420	$420
	WEST	SW Corridor	I-10 Reliever: SR-85 to 303L	construct new 6 lane freeway	11 miles	$330	$330
	WEST	SW Corridor	I-10 Reliever: 303L to 202L (South Mountain Fwy)	construct new 6 lane freeway	14 miles	$500	$500
	WEST	SW Corridor	I-10 Reliever: 202L (South Mountain Fwy) to I-17	construct new 6 lane freeway	5 miles	$300	$300
	PHX	New River Corridor	91st Ave/303L to I-17/New River Road	construct new 6 lane freeway	12 miles	$570	$570
	EAST	Williams Gateway	202L (Santan Fwy) near Hawes Road to US-60 East of Gold Canyon	construct new 6 lane freeway (Maricopa Co. only)	4 miles	$300	$300
					Total =	***$5,420***	***$5,420***

A-2: New General Purpose Lanes

Project Type	*Area*	*Location*	*Limits*	*Description*	*Length (if applicable)*	*Regional Cost (Millions)*	*Total Cost (Millions)*
New lanes added to existing freeway facility	WEST	I-10	SR-85 to 101L (Aqua Fria)	one lane in each direction	21 miles	$280	$280
	PHX	I-10	101L (Agua Fria) to I-17	one lane in each direction	7 miles	$50	$50
	EAST	I-10	202L (Santan) to Riggs Road	one lane in each direction	5 miles	$40	$40
	PHX	I-17	New River Road/Anthem Way to 101L (Aqua Fria)	one lane in each direction	17 miles	$160	$160
	EAST	US-60	I-10 to 101 L (Price)	one lane in each direction	7 miles	$10	$10
	EAST	US-60	202L (Red Mountain) to Goldfield Road	one lane in each direction	8 miles	$32	$32
	WEST	101L	Agua Fria Fwy: I-17 to I-10	one lane in each direction	21 miles	$168	$168
	PHX	101L	Pima Fwy: I-17 to 32nd Street	one lane in each direction	6 miles	$48	$48
	NE	101L	Pima Fwy: 32nd Street to 202L (Red Mountain)	one lane in each direction	22 miles	$160	$160
	EAST	101L	Price Fwy: 202L (Red Mountain) to 202L (Santan)	one lane in each direction	10 miles	$80	$80
	PHX	202L	Red Mountain Fwy: I-10 to 101L (Pima)	one lane in each direction	9 miles	$88	$88
	EAST	202L	Red Mountain Fwy: 101L (Pima) to US-60	one lane in each direction	18 miles	$160	$160
	EAST	202L	Santan Fwy: I-10 to US-60	one lane in each direction	21 miles	$208	$208
	PHX	SR-51	101L (Pima) to Shea Boulevard	one lane in each direction	6 miles	$48	$48
					Total =	***$1,532***	***$1,532***

A-3: New HOV Lanes

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
High occupancy vehicle lanes constructed in the median of an existing freeway facility							
					Total =	***$0***	***$0***

A-4: New Service Interchanges

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
New freeway interchanges at arterial roadways	WEST	I-10	At 355th Avenue	construct full-traffic interchange		$8	$16
	WEST	I-10	At Johnson Road (307th Avenue)	construct full-traffic interchange		$8	$16
	WEST	I-10	At Wilson Avenue	construct full-traffic interchange		$8	$16
	EAST	I-10	At Chandler Heights Road	construct full-traffic interchange		$8	$16
	PHX	I-17	At Dove Valley Road	construct full-traffic interchange		$8	$16
	PHX	I-17	At Dixileta Drive	construct full-traffic interchange		$8	$16
	PHX	I-17	At Jomax Road	construct full-traffic interchange		$8	$16
	EAST	US-60	At Lindsay Road	construct half-traffic interchange		$4	$8
	WEST	101L	Agua Fria Fwy: At Beardsley Boulevard/Union Hills Road	construct full-traffic interchange		$8	$16
	WEST	101L	Agua Fria Fwy: At Bethany Home Road	complete interchange construction		$4	$8
	NE	101L	Pima Fwy: At 64th Street	construct full-traffic interchange		$8	$16
	EAST	202L	Red Mountain: At Mesa Drive	construct full-traffic interchange		$8	$16
					Total =	***$88***	***$176***

A-5: Service Interchange Improvements

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Improvements to existing freeway interchanges at arterial roadways	WEST	I-10	At Perryville	reconstruct traffic interchange		$16	$16
	PHX	I-17	At New River Road	construct full-traffic interchange		$16	$16
	PHX	I-17	At Happy Valley Road	rebuild traffic interchange		$17	$17
	PHX	I-17	At Pinnacle Peak Road	rebuild traffic interchange		$17	$17
	PHX	I-17	At Deer Valley Road	rebuild traffic interchange		$2	$2
	EAST	US-60	At: Greenfield Road, Higley Road, Sossaman Road, Ellsworth Road, Crismon Road, and Signal Butte Road	traffic interchange improvements		$21	$21
					Total =	***$89***	***$89***

A-6: New Service Interchange HOV Ramps*

*projects listed are from the Jan 2003 MAG High Capacity Transit Study

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
New direct access HOV ramps at freeway interchanges at arterial roadways							
					Total =	***$0***	***$0***

A-7: New System Interchange HOV Ramps*

*projects listed are from the Jan 2003 MAG High Capacity Transit Study

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
New direct access HOV ramps at freeway system interchanges							
					Total =	***$0***	***$0***

A-8: Bottleneck Improvements

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Bottleneck Improvements to existing freeways, includes Collectot-Distributor roads, Auxillay lanes, and frontage roads	EAST	I-10	16th Street to Baseline Road	construct Collector-Distributor roads		$400	$400
	PHX	I-17	101L (Agua Fria Fwy) to I-10	Long-term capacity enhancements	14 miles	$1,030	$1,030
	PHX	I-17	I-10 West to Durango Curve	Long-term capacity enhancements	5 miles	$400	$400
	WEST	101L	Agua Fria Fwy: Bell Road to Northern Avenue	construct auxillary lanes		$10	$10
	EAST	101L	Price Fwy: McDowell Road to Guadalupe Road	misc. bottleneck improvements		$500	$500
	EAST	202L	Red Mountain Fwy: Rural Road to Dobson Road	misc. bottleneck improvements		$250	$250
	PHX	SR-51	Glendale Avenue to I-10	Long-term capacity enhancements	5 miles	$400	$400
					Total =	***$2,990***	***$2,990***

A-9: Maintenance

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Freeway maintenance, landscaping, and aesthetics						$480	$480
					Total =	***$480***	***$480***

A-10: Mitigation

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to mitigate noise generated from freeway traffic						$200	$200
					Total =	***$200***	***$200***

A-11: FMS/ITS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with traffic flow and incident management						$250	$250
					Total =	***$250***	***$250***

	Regional Cost (Millions)	Total Cost (Millions)
MAJOR ARTERIAL STREETS	***$1,600***	***$2,000***

B - Arterial Roadway Corridors

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
construct/improve roadways. Higher level of access control than typical arterial.							
					Total =	***$0***	***$0***

C - Regional Arterial Grid

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Improvements to arterial roadways	VARIES	Arterial roadways	Throughout Maricopa County	Arterial Capacity Improvements		$1,600	$2,000
					Total =	***$1,600***	***$2,000***

	Regional Cost (Millions)	Total Cost (Millions)
TRANSIT	***$3,984***	***$7,660***

D - Regional Bus Grid

D-1: Fixed Route Bus Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of Buses on Fixed Routes	VARIES	Roadways/Freeways	Throughout Maricopa County	1,456 Peak Vehicles + 362 spares (assumes 12-year life cycle)		$629	$786
					Total =	*$629*	***$786***

D-2: Fixed Route Bus Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with fixed route buses miles of service	VARIES	Roadways/Freeways	Throughout Maricopa County	Fixed Route revenue miles of service - 47 million/year		$760	$2,169
					Total =	***$760***	***$2,169***

D-3: Circulator/Shuttle Bus Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of circulator/shuttle buses	VARIES	Roadways/Freeways	Throughout Maricopa County	280 Peak Vehicles + 70 spares (assumes 12-year life cycle)		$104	$130
					Total =	***$104***	***$130***

D-4: Circulator/Shuttle Bus Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with circulator/shuttle buses miles of service	VARIES	Roadways/Freeways	Throughout Maricopa County	Circulator/Shuttle Bus revenue miles of service - 8.6 million/year		$137	$390
					Total =	***$137***	***$390***

D-5: Rural Transit Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of rural transit buses	VARIES	Roadways/Freeways	Throughout Maricopa County	158 Peak Vehicles + 39 spares (assumes 5-year life cycle)		$47	$58
					Total =	***$47***	***$58***

D-6: Rural Transit Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with circulator/shuttle buses miles of service	VARIES	Roadways/Freeways	Throughout Maricopa County	Rural Transit revenue miles of service - 150,000/year		$28	$55
					Total =	***$28***	***$55***

D-7: ADA Paratransit Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of ADA paratransit vehicles	VARIES	Roadways/Freeways	Throughout Maricopa County	148 Peak Vehicles + 36 spares (assumes 5-year life cycle)		$40	$50
					Total =	***$40***	***$50***

D-8: ADA Paratransit Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with ADA paratransit miles of service	VARIES	Roadways/Freeways	Throughout Maricopa County	ADA Paratransit revenue miles of service - 614,400/year		$59	$168
					Total =	***$59***	***$168***

D-9: Elderly Paratransit Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of elderly paratransit vehicles	VARIES	Roadways/Freeways	Throughout Maricopa County	167 Peak Vehicles + 41 spares (assumes 5-year life cycle)		$43	$53
					Total =	***$43***	***$53***

D-10: Elderly Paratransit Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with elderly paratransit miles of service	VARIES	Roadways/Freeways	Throughout Maricopa County	Elderly Paratransit revenue miles of service - 536,800/year		$78	$224
					Total =	***$78***	***$224***

D-11: ITS/VMS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with providing faster service, includes transit signal priority	VARIES	Roadways/Freeways	Throughout Maricopa County			$72	$90
					Total =	***$72***	***$90***

D-12: O&M facilities, Transit Centers, Park & Rides

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Transit support facilities	VARIES	Roadways/Freeways	Throughout Maricopa County	Assumes ten O&M facilities, two major activity transit centers, five 6-bay transit centers, 15 4-bay transit centers, and 25 park-and-ride facilities (assumes life-cycle = 25 years for O&M and 20 years for other facilities)		$182	$227
					Total =	***$182***	***$227***

E - Express/BRT Bus

E-1: Express/BRT Freeway Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of Express/BRT operating on freeways	VARIES	Roadways/Freeways	Throughout Maricopa County	125 Peak Vehicles + 31 spares (assumes 12-year life cycle)		$86	$108
					Total =	***$86***	***$108***

E-2: Express/BRT on Freeway Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with Express/BRT bus routes on freeways	VARIES	Roadways/Freeways	Throughout Maricopa County	Fixed Route revenue miles of service - 11.9 million/year		$324	$324
					Total =	***$324***	***$324***

E-3: Skip-Stop Service Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of Skip-Stop express buses	VARIES	Roadways/Freeways	Throughout Maricopa County	254 Peak Vehicles + 63 spares (assumes 12-year life cycle)		$86	$107
					Total =	***$86***	***$107***

E-4: Skip-Stop Service Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with skip-stop express bus service	VARIES	Roadways/Freeways	Throughout Maricopa County	Fixed Route revenue miles of service - 5.7 million/year		$381	$381
					Total =	***$381***	***$381***

E-5: ITS/VMS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with providing faster service	VARIES	Roadways/Freeways	Throughout Maricopa County	Includes Automatic Vehicle Locator (AVL), wireless data and voice communications, and integrated "Smart" fare box		$10	$12
					Total =	***$10***	***$12***

E-6: O&M facilities, Transit Centers, Park & Rides

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Transit support facilities	VARIES	Roadways/Freeways	Throughout Maricopa County	Assumes ten O&M facilities, two major activity transit centers, five 6-bay transit centers, 15 4-bay transit centers, and 25 park-and-ride facilities (assumes life-cycle = 25 years for O&M and 20 years for other facilities)		$42	$52
					Total =	***$42***	***$52***

F - Enhanced BRT/LRT

F-1: Enhanced BRT/LRT Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of BRT/LRT Vehicles for expansion of 30-mile network							
					Total =	***$0***	***$0***

F-2: Enhanced BRT/LRT Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with expansion of 30-mile network							
					Total =	***$0***	***$0***

F-3: ITS/VMS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with providing faster service for the expanded BRT/LRT							
					Total =	***$0***	***$0***

F-4: O&M facilities, Transit Centers, Park & Rides

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Expanded BRT/LRT support facilities							
					Total =	***$0***	***$0***

G - Light Rail

G-1: LRT Minimum Operating System Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of LRT Vehicles for first 20-mile section	VARIES	Arterial Roadways	Christown Mall in Phoenix to Main Street in Mesa	40 Peak Vehicles + 6 spares (assumes 12-year life cycle)		$589	$1,178
					Total =	***$589***	***$1,178***

G-2: LRT Minimum Operating System Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with the first 20-miles of LRT	VARIES	Arterial Roadways	Christown Mall in Phoenix to Main Street in Mesa	LRT revenue miles of service - 1.7 million/year		$0	$450
					Total =	***$0***	***$450***

G-3: LRT Minimum Operating System Extension Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of LRT Vehicles with 10-mile extension	VARIES	Arterials/Freeways	Extension of first 20-mile segment, exact location yet to be determined	3 Peak Vehicles + 2 spares (assumes 12-year life cycle)		$225	$450
					Total =	***$225***	$450

G-4: LRT Minimum Operating System Extension Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with the 10-mile extension of LRT	VARIES	Arterials/Freeways	Extension of first 20-mile segment, exact location yet to be determined	LRT revenue miles of service - 235,000/year		$0	$120
					Total =	***$0***	***$120***

G-5: ITS/VMS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with providing faster service for the first 30 miles of LRT	VARIES	Roadways/Freeways	Throughout Maricopa County	Includes Automatic Vehicle Locator (AVL), wireless data and voice communications, track signalization, and traffic signal prioritization		$27	$34
					Total =	***$27***	***$34***

G-6: O&M facilities, Transit Centers, Park & Rides

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
LRT support facilities	VARIES	Roadways/Freeways	Throughout Maricopa County	Assumes 21 O&M facilities, 20 stations, electrification infrstructure, and a rail vehicle maintenance/storage facility (assumes life-cycle = 25 years for O&M and 20 years for other facilities)		$35	$44
					Total =	$35	$44

	Regional Cost (Millions)	Total Cost (Millions)
OTHER REGIONAL PROGRAMS	***$602***	***$752***

I-1: Bike/Pedestrian

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to facilitate bicycle and pedestrian travel	VARIES	Roadways/Freeways	Throughout Maricopa County	approximately the current level of regional funding		$120	$150
					Total =	***$120***	***$150***

I-2: Vanpool

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of Vanpool vehicles and expected operating costs for 2025	VARIES	Roadways/Freeways	Throughout Maricopa County	includes 644 Peak Vehicles + 160 spares (assumes 4-year life cycle) and 430,080 revenue miles of service/year		$144	$180
					Total =	***$144***	***$180***

I-3: Rideshare/Transportation Demand Management (TDM)

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Cost associted with the rideshare program/TDM	VARIES	Roadways/Freeways	Throughout Maricopa County	includes the rideshare program administrative costs and the cost associated with TDM		$98	$122
					Total =	***$98***	***$122***

I-4: Air Quality/Mitigation

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects that support air quality control measures	VARIES	Roadways/Freeways	Throughout Maricopa County	approximately the current level of regional funding		$160	$200
					Total =	***$160***	***$200***

I-5: Regional Arterial ITS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with traffic flow and incident management on arterial streets	VARIES	Roadways/Freeways	Throughout Maricopa County			$80	$100
					Total =	***$80***	***$100***

Regional Cost for Scenario A (Millions)	Total Cost for Scenario A (Millions)*
$17,235	**$21,549**

*The total cost is equal to the Regional funding level + the Local funding level

APPENDIX B

SCENARIO B

PROJECT DESCRIPTIONS

	Regional Cost (Millions)	Total Cost (Millions)
FREEWAYS	***$8,906***	***$8,906***

A-1: New Freeway Corridors

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
New freeway facility	PHX	202L	South Mountain Fwy: 202L (Santan Fwy) to I-10	construct new 6 lane freeway + HOV lanes	21 miles	$1,500	$1,500
	WEST	303L	I-17 to MC-85	construct new 6 lane freeway	40 miles	$1,500	$1,500
	WEST	SW Corridor	I-10 Reliever: SR-85 to 303L	construct new 6 lane freeway	11 miles	$330	$330
	WEST	SW Corridor	I-10 Reliever: 303L to 202L (South Mountain Fwy)	construct new 6 lane freeway	14 miles	$500	$500
	EAST	Williams Gateway	202L (Santan Fwy) near Hawes Road to US-60 East of Gold Canyon	construct new 6 lane freeway (Maricopa Co. only)	4 miles	$300	$300
					Total =	***$4,130***	***$4,130***

A-2: New General Purpose Lanes

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
New lanes added to existing freeway facility							
					Total =	***$0***	***$0***

A-3: New HOV Lanes

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
High occupancy vehicle lanes constructed in the median of an existing freeway facility	WEST	I-10	Johnson Road to 101L (Aqua Fria)	one HOV lane in each direction	27miles	$130	$130
	PHX	I-10	101L (Aqua Fria) to I-17	second HOV lane in each direction	10miles	$50	$50
	EAST	I-10	202L (Santan) to Riggs Road	one HOV lane in each direction	5 miles	$25	$25
	PHX	I-17	New River Road/Anthem Way to 101L (Aqua Fria)	one HOV lane in each direction	17miles	$100	$100
	PHX	I-17	I-10 Stack to I-10 Junction	one HOV lane in each direction	6 miles	$35	$35
	EAST	US-60	202L (Red Mountain) to Meridian Road	one HOV lane in each direction	4 miles	$12	$12
	WEST	101L	Aqua Fria Fwy: I-17 to I-10	one HOV lane in each direction	21 miles	$105	$105
	PHX	101L	Pima Fwy: I-17 to 32nd Street	one HOV lane in each direction	6 miles	$30	$30
	NE	101L	Pima Fwy: 32nd Street to 202L (Red Mountain)	one HOV lane in each direction	22 miles	$100	$100
	EAST	101L	Price Fwy: 202L (Red Mountain) to 202L (Santan)	one HOV lane in each direction	10 miles	$50	$50
	EAST	202L	Red Mountain Fwy: 101L (Pima) to US-60	one HOV lane in each direction	18 miles	$100	$100
	EAST	202L	Santan Fwy: I-10 to US-60	one HOV lane in each direction	23 miles	$130	$130
	PHX	SR-51	101L (Pima) to Shea Boulevard	one HOV lane in each direction	7 miles	$31	$31
					Total =	***$898***	***$898***

A-4: New Service Interchanges

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
New freeway interchanges at arterial roadways							
					Total =	***$0***	***$0***

A-5: Service Interchange Improvements

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Improvements to existing freeway interchanges at arterial roadways							
					Total =	***$0***	***$0***

A-6: New Service Interchange HOV Ramps*

*projects listed are from the Jan 2003 MAG High Capacity Transit Study

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
New direct access HOV ramps at freeway interchanges at arterial roadways	EAST	I-10	At Warner Road	construct direct access HOV ramps		$10	$10
	PHX	I-10	At 79th Avenue	modify to serve HOV-only to/from West		$60	$60
	WEST	I-10	At Litchfield Road	construct direct access HOV ramps		$10	$10
	WEST	I-10	At Jackrabbit Trail	construct direct access HOV ramps		$10	$10
	PHX	I-17	At Jefferson Street/Adams Street	construct direct access HOV ramps		$43	$43
	PHX	I-17	At Metrocenter	construct direct access HOV ramps		$82	$82
	EAST	US-60	At Rural Road	construct direct access HOV ramps		$10	$10
	EAST	US-60	At Power Road	construct HOV ramp connections		$10	$10
	WEST	101L	Agua Fria Fwy: At Maryland Avenue	construct direct access HOV ramps		$10	$10
	EAST	202L	Red Mountain Fwy: At Gilbert Road	construct HOV ramp connections		$10	$10
	EAST	202L	Santan Fwy: At Val Vista Drive	construct HOV ramp connections		$10	$10
					Total =	***$265***	***$265***

A-7: New System Interchange HOV Ramps*

*projects listed are from the Jan 2003 MAG High Capacity Transit Study

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
New direct access HOV ramps at freeway system interchanges	PHX	I-10/I-17	At the I-10/I-17 Junction	construct HOV ramp connections		$35	$35
	WEST	101L	Agua Fria Fwy: At I-10 system interchange	construct HOV ramp connections		$66	$66
	WEST	101L	Agua Fria Fwy: At I-17 system interchange	construct HOV ramp connections		$88	$88
	EAST	202L	Red Mountain Fwy: At US-60 system interchange	construct HOV ramp connections		$35	$35
	EAST	202L	Santan Fwy: At I-10 system interchange	construct HOV ramp connections		$35	$35
	EAST	202L	Santan Fwy: At 101L (Price Fwy) system interchange	construct HOV ramp connections		$35	$35
	PHX	SR-51	At 101L (Pima Fwy) system interchange	construct HOV ramp connections		$17	$17
					Total =	***$311***	***$311***

A-8: Bottleneck Improvements

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Bottleneck Improvements to existing freeways, includes Collectot-Distributor roads, Auxillay lanes, and frontage roads	EAST	I-10	16th Street to Baseline Road	construct Collector-Distributor roads		$400	$400
	PHX	I-17	101L (Agua Fria Fwy) to I-10	Long-term capacity enhancements	14 miles	$1,030	$1,030
	WEST	101L	Agua Fria Fwy: Bell Road to Northern Avenue	construct auxillary lanes		$42	$42
	EAST	101L	Price Fwy: McDowell Road to Guadalupe Road	misc. bottleneck improvements		$250	$250
	EAST	202L	Red Mountain Fwy: Rural Road to Dobson Road	misc. bottleneck improvements		$500	$500
	PHX	SR-51	Glendale Avenue to I-10	Long-term capacity enhancements	5 miles	$400	$400
					Total =	***$2,622***	***$2,622***

A-9: Maintenance

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Freeway maintenance, landscaping, and aesthetics	VARIES	Freeways	Throughout Maricopa County	Calculated using $125,000/mile/year from ADOT for the 147 existing miles of freeway + the # of new miles of freeway in this alternative		$480	$480
					Total =	***$480***	***$480***

A-10: Mitigation

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to mitigate noise generated from freeway traffic	VARIES	Freeways	Throughout Maricopa County	Includes the installation of noise walls.		$200	$200
					Total =	***$200***	***$200***

A-11: FMS/ITS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with traffic flow and incident management	VARIES					$0	$0
					Total =	***$0***	***$0***

	Regional Cost (Millions)	Total Cost (Millions)
MAJOR ARTERIAL STREETS	**$3,701**	**$4,627**

B - Arterial Roadway Corridors

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
construct/improve roadways. Higher level of access control than typical arterial.	PHX	I-17	Happy Valley Road to New River Road/Anthem Way	construct frontage roads		$10	$12
	NE	101L	Pima Fwy: Scottsdale Road to Princess Drive	construct North frontage road		$6	$7
	NE	101L	Pima Fwy: Hayden Road to Union Hills Road	construct South frontage road		$4	$5
	EAST	101L	Price Extension: 202L to I-10	construct/improve roadway (Maricopa Co. only)	6 miles	$48	$60
	WEST	US-93	Wickenburg interim bypass	construct/improve roadway		$12	$15
	WEST	SR-74	US-60 to I-17	Widen to 4 lanes		$192	$240
	WEST	SR-85	I-8 to I-10	Widen to 4 lanes	40 miles	$48	$60
		US-60	Grand Avenue: Morristown to 303L	construct/improve roadway		$128	$160
		US-60	Grand Avenue: 303L to 101L (Agua Fria)	construct/improve roadway	10 miles	$112	$140
		US-60	Grand Avenue: 101L (Agua Fria) to 19th Avenue	grade separations at 19th Avenue and at Bethany Home Road, plus other improvements		$160	$200
	EAST	E. Valley Corridor	I-10 to US-60/Florence Junction	construct/improve roadway (Maricopa Co. only)	18 miles	$144	$180
	WEST	Lake Pleasant/ Beardsley Pkwy.	101L to 303L	construct/improve roadway	10 miles	$48	$60
	PHX	Sonoran Pkwy.	Central Avenue to 32nd Street	construct/improve roadway	4 miles	$28	$35
	PHX	Rio Salado Pkwy.	202L (South Mountain) to 7th Street	construct/improve roadway	7 miles	$38	$48
	PHX	Black Mountain	Arterial Connection to SR 51	construct/improve roadway		$19	$24
	NE	Airport tunnel	Scottsdale Airport: tunnel under runway	construct/improve roadway		$32	$40
	NE	Shea Boulevard	101L (Pima) to SR-87 (Beeline)	construct/improve roadway	11 miles	$5	$6
	NE	Pima Road	101L (Pima) to Cave Creek Road	construct/improve roadway	12 miles	$48	$60
	NE	Scottsdale Road	101L (Pima) to SR-74 (Carefree Highway)	construct/improve roadway	9 miles	$36	$45
	NE	SR-74 (Carefree Hwy)	Cave Creek Road to Scottsdale Road	construct/improve roadway	2 miles	$8	$10
	WEST	Douglas Ranch Road	US-60 to 355th Avenue	construct/improve roadway	25 miles	$200	$250
	WEST	Happy Valley/Jomax	Douglas Ranch Road to Lake Pleasant Parkway	construct/improve roadway	23 miles	$160	$200
	WEST	Dysart/El Mirage	SR-74 (Carefree Highway) to I-10 Reliever	construct/improve roadway	30 miles	$240	$300
	WEST	Indian School Road	303L to 101L (Agua Fria)	construct/improve roadway	8 miles	$32	$40
	WEST	NW Corridor	I-10 to US-93 North of Wickenburg	Designate corridor as Canamex Highway	40 miles	$112	$140
	WEST	Northern Avenue	303L to Grand Avenue	Cost includes 9 Grade seperated intersections, free flow ramp connections at 303L and 101L (Agua Fria), widening, access control, ITS, signage		$200	$250
	PHX	99th Avenue	I-10 to I-10 Reliever	construct/improve roadway		$32	$40
					Total =	***$2,101***	***$2,627***

C - Regional Arterial Grid

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Improvements to arterial roadways	VARIES	Arterial roadways	Throughout Maricopa County	Arterial Capacity Improvements		$1,600	$2,000
					Total =	***$1,600***	***$2,000***

	Regional Cost (Millions)	Total Cost (Millions)
TRANSIT	**$4,027**	**$7,708**

D - Regional Bus Grid

D-1: Fixed Route Bus Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of Buses on Fixed Routes	VARIES	Roadways/Freeways	Throughout Maricopa County	1,456 Peak Vehicles + 362 spares (assumes 12-year life cycle)		$629	$786
					Total =	***$629***	***$786***

D-2: Fixed Route Bus Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with fixed route buses miles of service	VARIES	Roadways/Freeways	Throughout Maricopa County	Fixed Route revenue miles of service - 47 million/year		$760	$2,169
					Total =	***$760***	***$2,169***

D-3: Circulator/Shuttle Bus Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of circulator/shuttle buses	VARIES	Roadways/Freeways	Throughout Maricopa County	280 Peak Vehicles + 70 spares (assumes 12-year life cycle)		$104	$130
					Total =	***$104***	***$130***

D-4: Circulator/Shuttle Bus Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with circulator/shuttle buses miles of service	VARIES	Roadways/Freeways	Throughout Maricopa County	Circulator/Shuttle Bus revenue miles of service - 8.6 million/year		$137	$390
					Total =	***$137***	***$390***

D-5: Rural Transit Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of rural transit buses	VARIES	Roadways/Freeways	Throughout Maricopa County	158 Peak Vehicles + 39 spares (assumes 5-year life cycle)		$47	$58
				Total =		***$47***	***$58***

D-6: Rural Transit Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with circulator/shuttle buses miles of service	VARIES	Roadways/Freeways	Throughout Maricopa County	Rural Transit revenue miles of service - 150,000/year		$28	$55
				Total =		***$28***	***$55***

D-7: ADA Paratransit Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of ADA paratransit vehicles	VARIES	Roadways/Freeways	Throughout Maricopa County	148 Peak Vehicles + 36 spares (assumes 5-year life cycle)		$40	$50
				Total =		***$40***	***$50***

D-8: ADA Paratransit Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with ADA paratransit miles of service	VARIES	Roadways/Freeways	Throughout Maricopa County	ADA Paratransit revenue miles of service - 614,400/year		$59	$168
				Total =		***$59***	***$168***

D-9: Elderly Paratransit Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of elderly paratransit vehicles	VARIES	Roadways/Freeways	Throughout Maricopa County	167 Peak Vehicles + 41 spares (assumes 5-year life cycle)		$43	$53
				Total =		***$43***	***$53***

D-10: Elderly Paratransit Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with elderly paratransit miles of service	VARIES	Roadways/Freeways	Throughout Maricopa County	Elderly Paratransit revenue miles of service - 536,800/year		$78	$224
					Total =	***$78***	***$224***

D-11: ITS/VMS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with providing faster service, includes transit signal priority	VARIES	Roadways/Freeways	Throughout Maricopa County			$72	$90
					Total =	***$72***	***$90***

D-12: O&M facilities, Transit Centers, Park & Rides

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Transit support facilities	VARIES	Roadways/Freeways	Throughout Maricopa County	Assumes ten O&M facilities, two major activity transit centers, five 6-bay transit centers, 15 4-bay transit centers, and 25 park-and-ride facilities (assumes life-cycle = 25 years for O&M and 20 years for other facilities)		$182	$227
					Total =	***$182***	***$227***

E - Express/BRT Bus

E-1: Express/BRT Freeway Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of Express/BRT operating on freeways	VARIES	Roadways/Freeways	Throughout Maricopa County	125 Peak Vehicles + 31 spares (assumes 12-year life cycle)		$92	$115
					Total =	***$92***	***$115***

E-2: Express/BRT on Freeway Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with Express/BRT bus routes on freeways	VARIES	Roadways/Freeways	Throughout Maricopa County	Fixed Route revenue miles of service - 11.9 million/year		$345	$345
					Total =	***$345***	***$345***

E-3: Skip-Stop Service Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of Skip-Stop express buses	VARIES	Roadways/Freeways	Throughout Maricopa County	254 Peak Vehicles + 63 spares (assumes 12-year life cycle)		$102	$127
					Total =	***$102***	***$127***

E-4: Skip-Stop Service Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with skip-stop express bus service	VARIES	Roadways/Freeways	Throughout Maricopa County	Fixed Route revenue miles of service - 5.7 million/year		$381	$381
					Total =	***$381***	***$381***

E-5: ITS/VMS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with providing faster service	VARIES	Roadways/Freeways	Throughout Maricopa County	Includes Automatic Vehicle Locator (AVL), wireless data and voice communications, and integrated "Smart" fare box		$10	$12
					Total =	***$10***	***$12***

E-6: O&M facilities, Transit Centers, Park & Rides

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Transit support facilities	VARIES	Roadways/Freeways	Throughout Maricopa County	Assumes ten O&M facilities, two major activity transit centers, five 6-bay transit centers, 15 4-bay transit centers, and 25 park-and-ride facilities (assumes life-cycle = 25 years for O&M and 20 years for other facilities)		$42	$52
					Total =	***$42***	***$52***

F - Enhanced BRT/LRT

F-1: Enhanced BRT/LRT Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of BRT/LRT Vehicles for expansion of 30-mile network							
					Total =	*$0*	*$0*

F-2: Enhanced BRT/LRT Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with expansion of 30-mile network							
					Total =	*$0*	*$0*

F-3: ITS/VMS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with providing faster service for the expanded BRT/LRT							
					Total =	*$0*	*$0*

F-4: O&M facilities, Transit Centers, Park & Rides

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Expanded BRT/LRT support facilities							
					Total =	*$0*	*$0*

G - Light Rail

G-1: LRT Minimum Operating System Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of LRT Vehicles for first 20-mile section	VARIES	Arterial Roadways	Christown Mall in Phoenix to Main Street in Mesa	40 Peak Vehicles + 6 spares (assumes 12-year life cycle)		$589	$1,178
					Total =	***$589***	***$1,178***

G-2: LRT Minimum Operating System Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with the first 20-miles of LRT	VARIES	Arterial Roadways	Christown Mall in Phoenix to Main Street in Mesa	LRT revenue miles of service - 1.7 million/year		$0	$450
					Total =	***$0***	***$450***

G-3: LRT Minimum Operating System Extension Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of LRT Vehicles with 10-mile extension	VARIES	Arterials/Freeways	Extension of first 20-mile segment, exact location yet to be determined	3 Peak Vehicles + 2 spares (assumes 12-year life cycle)		$225	$450
					Total =	***$225***	$450

G-4: LRT Minimum Operating System Extension Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with the 10-mile extension of LRT	VARIES	Arterials/Freeways	Extension of first 20-mile segment, exact location yet to be determined	LRT revenue miles of service - 235,000/year		$0	$120
					Total =	***$0***	***$120***

G-5: ITS/VMS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with providing faster service for the first 30 miles of LRT	VARIES	Roadways/Freeways	Throughout Maricopa County	Includes Automatic Vehicle Locator (AVL), wireless data and voice communications, track signalization, and traffic signal prioritization		$27	$34
					Total =	***$27***	***$34***

G-6: O&M facilities, Transit Centers, Park & Rides

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
LRT support facilities	VARIES	Roadways/Freeways	Throughout Maricopa County	Assumes 21 O&M facilities, 20 stations, electrification infrstructure, and a rail vehicle maintenance/storage facility (assumes life-cycle = 25 years for O&M and 20 years for other facilities)		$35	$44
					Total =	***$35***	***$44***

	Regional Cost (Millions)	Total Cost (Millions)
OTHER REGIONAL PROGRAMS	**$602**	**$752**

I-1: Bike/Pedestrian

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to facilitate bicycle and pedestrian travel	VARIES	Roadways/Freeways	Throughout Maricopa County	approximately the current level of regional funding		$120	$150
					Total =	***$120***	***$150***

I-2: Vanpool

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of Vanpool vehicles and expected operating costs for 2025	VARIES	Roadways/Freeways	Throughout Maricopa County	includes 644 Peak Vehicles + 160 spares (assumes 4-year life cycle) and 430,080 revenue miles of service/year		$144	$180
					Total =	***$144***	***$180***

I-3: Rideshare/Transportation Demand Management (TDM)

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Cost associted with the rideshare program/TDM	VARIES	Roadways/Freeways	Throughout Maricopa County	includes the rideshare program administrative costs and the cost associated with TDM		$98	$122
					Total =	***$98***	***$122***

I-4: Air Quality/Mitigation

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects that support air quality control measures	VARIES	Roadways/Freeways	Throughout Maricopa County	approximately the current level of regional funding		$160	$200
					Total =	***$160***	***$200***

I-5: Regional Arterial ITS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with traffic flow and incident management on arterial streets	VARIES	Roadways/Freeways	Throughout Maricopa County			$80	$100
					Total =	***$80***	***$100***

Regional Cost for Scenario B (Millions)	Total Cost for Scenario B (Millions)*
$17,236	**$21,993**

*The total cost is equal to the Regional funding level + the Local funding level

APPENDIX C

SCENARIO C

PROJECT DESCRIPTIONS

	Regional Cost (Millions)	Total Cost (Millions)
FREEWAYS	***$6,450***	***$6,450***

A-1: New Freeway Corridors

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
New freeway facility	PHX	202L	South Mountain Fwy: 202L (Santan Fwy) to I-10	construct new 6 lane freeway + HOV lanes	21 miles	$1,500	$1,500
	WEST	303L	I-17 to MC-85	construct new 6 lane freeway	40 miles	$1,500	$1,500
					Total =	***$3,000***	***$3,000***

A-2: New General Purpose Lanes

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
New lanes added to existing freeway facility	WEST	I-10	SR-85 to 101L (Aqua Fria)	one lane in each direction	21 miles	$280	$280
	PHX	I-10	101L (Agua Fria) to I-17	one lane in each direction	7 miles	$50	$50
	EAST	I-10	202L (Santan) to Riggs Road	one lane in each direction	5 miles	$40	$40
	PHX	I-17	New River Road/Anthem Way to 101L (Aqua Fria)	one lane in each direction	17 miles	$160	$160
	EAST	US-60	I-10 to 101 L (Price)	one lane in each direction	7 miles	$10	$10
	EAST	US-60	202L (Red Mountain) to Goldfield Road	one lane in each direction	8 miles	$32	$32
	WEST	101L	Agua Fria Fwy: I-17 to I-10	one lane in each direction	21 miles	$168	$168
	PHX	101L	Pima Fwy: I-17 to 32nd Street	one lane in each direction	6 miles	$48	$48
	NE	101L	Pima Fwy: 32nd Street to 202L (Red Mountain)	one lane in each direction	22 miles	$160	$160
	EAST	101L	Price Fwy: 202L (Red Mountain) to 202L (Santan)	one lane in each direction	10 miles	$80	$80
	PHX	202L	Red Mountain Fwy: I-10 to 101L (Pima)	one lane in each direction	9 miles	$88	$88
	EAST	202L	Red Mountain Fwy: 101L (Pima) to US-60	one lane in each direction	18 miles	$160	$160
	EAST	202L	Santan Fwy: I-10 to US-60	one lane in each direction	21 miles	$208	$208
	PHX	SR-51	101L (Pima) to Shea Boulevard	one lane in each direction	6 miles	$48	$48
					Total =	***$1,532***	***$1,532***

A-3: New HOV Lanes

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
High occupancy vehicle lanes constructed in the median of an existing freeway facility	WEST	I-10	Johnson Road to 101L (Aqua Fria)	one HOV lane in each direction	27miles	$130	$130
	PHX	I-10	101L (Aqua Fria) to I-17	second HOV lane in each direction	10miles	$50	$50
	PHX	I-10	202L (Santan) to Riggs Road	one HOV lane in each direction	5 miles	$25	$25
	PHX	I-17	New River Road/Anthem Way to 101L (Aqua Fria)	one HOV lane in each direction	17miles	$100	$100
	PHX	I-17	I-10 Stack to I-10 Split	one HOV lane in each direction	6 miles	$35	$35
	EAST	US-60	202L (Red Mountain) to Goldfield Road	one HOV lane in each direction	4 miles	$12	$12
	WEST	101L	Aqua Fria Fwy: I-17 to I-10	one HOV lane in each direction	21 miles	$105	$105
	PHX	101L	Pima Fwy: I-17 to 32nd Street	one HOV lane in each direction	6 miles	$30	$30
	NE	101L	Pima Fwy: 32nd Street to 202L (Red Mountain)	one HOV lane in each direction	22 miles	$100	$100
	EAST	101L	Price Fwy: 202L (Red Mountain) to 202L (Santan)	one HOV lane in each direction	10 miles	$50	$50
	EAST	202L	Red Mountain Fwy: 101L (Pima) to US-60	one HOV lane in each direction	18 miles	$100	$100
	EAST	202L	Santan Fwy: I-10 to US-60	one HOV lane in each direction	23 miles	$130	$130
	PHX	SR-51	101L (Pima) to Shea Boulevard	one HOV lane in each direction	7 miles	$31	$31
					Total =	***$898***	***$898***

A-4: New Service Interchanges

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
New freeway interchanges at arterial roadways							
					Total =	*$0*	*$0*

A-5: Service Interchange Improvements

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Improvements to existing freeway interchanges at arterial roadways							
					Total =	*$0*	*$0*

A-6: New Service Interchange HOV Ramps*

*projects listed are from the Jan 2003 MAG High Capacity Transit Study

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
New direct access HOV ramps at freeway interchanges at arterial roadways	PHX	I-10	At Warner Road	construct direct access HOV ramps		$10	$10
	PHX	I-10	At 79th Avenue	modify to serve HOV-only to/from West		$60	$60
	WEST	I-10	At Litchfield Road	construct direct access HOV ramps		$10	$10
	WEST	I-10	At Jackrabbit Trail	construct direct access HOV ramps		$10	$10
	PHX	I-17	At Jefferson Street/Adams Street	construct direct access HOV ramps		$43	$43
	PHX	I-17	At Metrocenter	construct direct access HOV ramps		$82	$82
	EAST	US-60	At Rural Road	construct direct access HOV ramps		$10	$10
		US-60	At Power Road	construct HOV ramp connections		$10	$10
	WEST	101L	Agua Fria Fwy: At Maryland Avenue	construct direct access HOV ramps		$10	$10
		202L	Red Mountain Fwy: At Gilbert Road	construct HOV ramp connections		$10	$10
		202L	Santan Fwy: At Val Vista Drive	construct HOV ramp connections		$10	$10
					Total =	*$265*	*$265*

A-7: New System Interchange HOV Ramps*

*projects listed are from the Jan 2003 MAG High Capacity Transit Study

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
New direct access HOV ramps at freeway system interchanges	PHX	I-10/I-17	At the I-10/I-17 split	construct HOV ramp connections		$35	$35
	WEST	101L	Agua Fria Fwy: At I-10 system interchange	construct HOV ramp connections		$66	$66
	WEST	101L	Agua Fria Fwy: At I-17 system interchange	construct HOV ramp connections		$88	$88
	EAST	202L	Red Mountain Fwy: At US-60 system interchange	construct HOV ramp connections		$35	$35
	EAST	202L	Santan Fwy: At I-10 system interchange	construct HOV ramp connections		$35	$35
	EAST	202L	Santan Fwy: At 101L (Price Fwy) system interchange	construct HOV ramp connections		$35	$35
	PHX	SR-51	At 101L (Pima Fwy) system interchange	construct HOV ramp connections		$17	$17
					Total =	*$311*	*$311*

A-8: Bottleneck Improvements

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Bottleneck Improvements to existing freeways, includes Collectot-Distributor roads, Auxillay lanes, and frontage roads							
					Total =	*$0*	*$0*

A-9: Maintenance

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Freeway maintenance, landscaping, and aesthetics	VARIES	Freeways	Throughout Maricopa County	Calculated using $125,000/mile/year from ADOT for the 147 existing miles of freeway + the # of new miles of freeway in this alternative		$444	$444
					Total =	*$444*	*$444*

A-10: Mitigation

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to mitigate noise generated from freeway traffic							
					Total =	*$0*	*$0*

A-11: FMS/ITS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with traffic flow and incident management							
					Total =	*$0*	*$0*

	Regional Cost (Millions)	Total Cost (Millions)
MAJOR ARTERIAL STREETS	**$1,600**	**$2,000**

B - Arterial Roadway Corridors

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
New / improvements to controlled access roadways. Higher level of access control than typical arterial.							
					Total =	*$0*	*$0*

C - Regional Arterial Grid

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Improvements to arterial roadways	VARIES	Arterial roadways	Throughout Maricopa County	Arterial Capacity Improvements		$1,600	$2,000
					Total =	*$1,600*	*$2,000*

	Regional Cost (Millions)	Total Cost (Millions)
TRANSIT	**$8,384**	**$13,656**

D - Regional Bus Grid

D-1: Fixed Route Bus Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of Buses on Fixed Routes	VARIES	Roadways/Freeways	Throughout Maricopa County	1,858 Peak Vehicles + 370 spares (assumes 12-year life cycle)		$1,040	$1,300
					Total =	*$1,040*	*$1,300*

D-2: Fixed Route Bus Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with fixed route buses miles of service	VARIES	Roadways/Freeways	Throughout Maricopa County	Fixed Route revenue miles of service - 83.6 million/year		$1,478	$3,684
					Total =	*$1,478*	*$3,684*

D-3: Circulator/Shuttle Bus Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of circulator/shuttle buses	VARIES	Roadways/Freeways	Throughout Maricopa County	179 Peak Vehicles + 40 spares (assumes 12-year life cycle)		$102	$138
					Total =	*$102*	*$138*

D-4: Circulator/Shuttle Bus Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with circulator/shuttle buses miles of service	VARIES	Roadways/Freeways	Throughout Maricopa County	Circulator/Shuttle Bus revenue miles of service - 8.9 million/year		$136	$406
					Total =	***$136***	***$406***

D-5: Rural Transit Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of rural transit buses	VARIES	Roadways/Freeways	Throughout Maricopa County	185 Peak Vehicles + 40 spares (assumes 5-year life cycle)		$48	$60
					Total =	***$48***	***$60***

D-6: Rural Transit Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with circulator/shuttle buses miles of service	VARIES	Roadways/Freeways	Throughout Maricopa County	Rural Transit revenue miles of service - 328,700/year		$103	$206
					Total =	***$103***	***$206***

D-7: ADA Paratransit Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of ADA paratransit vehicles	VARIES	Roadways/Freeways	Throughout Maricopa County	142 Peak Vehicles + 30 spares (assumes 5-year life cycle)		$48	$60
					Total =	***$48***	***$60***

D-8: ADA Paratransit Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with ADA paratransit miles of service	VARIES	Roadways/Freeways	Throughout Maricopa County	ADA Paratransit revenue miles of service - 536,200/year		$61	$174
					Total =	***$61***	***$174***

D-9: Elderly Paratransit Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of elderly paratransit vehicles	VARIES	Roadways/Freeways	Throughout Maricopa County	159 Peak Vehicles + 30 spares (assumes 5-year life cycle)		$54	$67
					Total =	***$54***	***$67***

D-10: Elderly Paratransit Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with elderly paratransit miles of service	VARIES	Roadways/Freeways	Throughout Maricopa County	Elderly Paratransit revenue miles of service - 581,700/year		$71	$204
					Total =	***$71***	***$204***

D-11: ITS/VMS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with providing faster service, includes transit signal priority	VARIES	Roadways/Freeways	Throughout Maricopa County			$140	$175
					Total =	***$140***	***$175***

D-12: O&M facilities, Transit Centers, Park & Rides

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Transit support facilities	VARIES	Roadways/Freeways	Throughout Maricopa County	Assumes ten O&M facilities, two major activity transit centers, five 6-bay transit centers, 15 4-bay transit centers, and 25 park-and-ride facilities (assumes life-cycle = 25 years for O&M and 20 years for other facilities)		$345	$431
					Total =	***$345***	***$431***

E - Express/BRT Bus

E-1: Express/BRT Freeway Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of Express/BRT operating on freeways	VARIES	Roadways/Freeways	Throughout Maricopa County	150 Peak Vehicles + 30 spares (assumes 12-year life cycle)		$104	$130
					Total =	***$104***	***$130***

E-2: Express/BRT on Freeway Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with Express/BRT bus routes on freeways	VARIES	Roadways/Freeways	Throughout Maricopa County	Fixed Route revenue miles of service - 6.7 million/year		$90	$90
					Total =	***$90***	***$90***

E-3: Skip-Stop Service Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of Skip-Stop express buses	VARIES	Roadways/Freeways	Throughout Maricopa County	150 Peak Vehicles + 30 spares (assumes 12-year life cycle)		$178	$222
					Total =	***$178***	***$222***

E-4: Skip-Stop Service Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with skip-stop express bus service	VARIES	Roadways/Freeways	Throughout Maricopa County	Fixed Route revenue miles of service - 9.8 million/year		$240	$240
					Total =	***$240***	***$240***

E-5: ITS/VMS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with providing faster service	VARIES	Roadways/Freeways	Throughout Maricopa County	Includes Automatic Vehicle Locator (AVL), wireless data and voice communications, and integrated "Smart" fare box		$80	$100
					Total =	***$80***	***$100***

E-6: O&M facilities, Transit Centers, Park & Rides

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Transit support facilities	VARIES	Roadways/Freeways	Throughout Maricopa County	Assumes ten O&M facilities, two major activity transit centers, five 6-bay transit centers, 15 4-bay transit centers, and 25 park-and-ride facilities (assumes life-cycle = 25 years for O&M and 20 years for other facilities)		$130	$162
					Total =	***$130***	***$162***

F - Enhanced BRT/LRT

F-1: Enhanced BRT/LRT Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of BRT/LRT Vehicles for expansion of 30-mile network				182 Peak Vehicles + 44 spares (assumes 20-year life cycle for LRT, and 12-year life cycle for BRT)		$1,391	$1,739
					Total =	***$1,391***	***$1,739***

F-2: Enhanced BRT/LRT Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with expansion of 30-mile network				Enhanced BRT/LRT revenue miles of service - 7.0 million/year		$1,120	$1,120
					Total =	***$1,120***	***$1,120***

F-3: ITS/VMS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with providing faster service for the expanded BRT/LRT				Includes Automatic Vehicle Locator (AVL), wireless data and voice communications, and integrated "Smart" fare box		$59	$73
					Total =	***$59***	***$73***

F-4: O&M facilities, Transit Centers, Park & Rides

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Expanded BRT/LRT support facilities				assumes 20 O&M facilities, bus guide-way, eletrification infrastructure, and expansion of existing rail vehicle maintenance/storage facility (assumes life-cycle = 25 years for O&M and 20 years for other facilities		$341	$426
					Total =	***$341***	***$426***

G - Light Rail

G-1: LRT Minimum Operating System (MOS) Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of LRT Vehicles for first 20-mile section	VARIES	Arterial Roadways	Christown Mall in Phoenix to Main Street in Mesa	40 Peak Vehicles + 6 spares (assumes 20-year life cycle)		$589	$1,178
					Total =	***$589***	***$1,178***

G-2: LRT Minimum Operating System (MOS) Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with the first 20-miles of LRT	VARIES	Arterial Roadways	Christown Mall in Phoenix to Main Street in Mesa	LRT revenue miles of service - 1.7 million/year		$0	$450
					Total =	***$0***	***$450***

G-3: LRT Minimum Operating System Extension Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of LRT Vehicles with 10-mile extension	VARIES	Arterials/Freeways	Extension of first 20-mile segment, exact location yet to be determined	10 Peak Vehicles + 2 spares (assumes 20-year life cycle)		$225	$450
					Total =	***$225***	***$450***

G-4: LRT Minimum Operating System Extension Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with the 10-mile extension of LRT	VARIES	Roadways/Freeways	Throughout Maricopa County	LRT revenue miles of service - 475,000/year		$0	$120
					Total =	***$0***	***$120***

G-5: ITS/VMS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with providing faster service for the first 30 miles of LRT	VARIES	Roadways/Freeways	Throughout Maricopa County	Includes Automatic Vehicle Locator (AVL), wireless data and voice communications, track signalization, and traffic signal prioritization		$27	$34
					Total =	***$27***	***$34***

G-6: O&M facilities, Transit Centers, Park & Rides

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
LRT support facilities	VARIES	Roadways/Freeways	Throughout Maricopa County	Assumes 21 O&M facilities, 20 stations, electrification infrstructure, and a rail vehicle maintenance/storage facility (assumes life-cycle = 25 years for O&M and 20 years for other facilities)		$35	$44
					Total =	***$35***	***$44***

H - Commuter Rail

H-1: Commuter Rail Capital

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Commuter Rail Service	VARIES	Existing RR tracks		32 miles		$94	$118
					Total =	*$94*	*$118*

H-2: Commuter Rail Operating

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Operating costs associated with commuter rail service	VARIES	Existing RR tracks		32 miles		$28	$28
					Total =	*$28*	*$28*

H-3: ITS/VMS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with providing faster commuter rail service	VARIES	Existing RR tracks		32 miles		$3	$3
					Total =	*$3*	*$3*

H-4: O&M facilities, Transit Centers, Park & Rides

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Commuter rail support facilities	VARIES	Existing RR tracks		32 miles		$24	$24
					Total =	*$24*	*$24*

	Regional Cost (Millions)	Total Cost (Millions)
OTHER REGIONAL PROGRAMS	***$602***	***$752***

I-1: Bike/Pedestrian

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to facilitate bicycle and pedestrian travel	VARIES	Roadways/Freeways	Throughout Maricopa County	approximately the current level of regional funding		$120	$150
					Total =	*$120*	*$150*

I-2: Vanpool

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Number of Vanpool vehicles and expected operating costs for 2025	VARIES	Roadways/Freeways	Throughout Maricopa County	includes 912 Peak Vehicles + 46 spares (assumes 4-year life cycle) and 512,000 revenue miles of service/year		$144	$180
					Total =	***$144***	***$180***

I-3: Rideshare/Transportation Demand Management (TDM)

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Cost associted with the rideshare program/TDM	VARIES	Roadways/Freeways	Throughout Maricopa County	includes the rideshare program administrative costs and the cost associated with TDM		$98	$122
					Total =	***$98***	***$122***

I-4: Air Quality/Mitigation

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects that support air quality control measures	VARIES	Roadways/Freeways	Throughout Maricopa County	approximately the current level of regional funding		$160	$200
					Total =	***$160***	***$200***

I-5: Regional Arterial ITS

Project Type	Area	Location	Limits	Description	Length (if applicable)	Regional Cost (Millions)	Total Cost (Millions)
Projects to aid with traffic flow and incident management on arterial streets	VARIES	Roadways/Freeways	Throughout Maricopa County			$80	$100
					Total =	***$80***	***$100***

Regional Cost for Scenario C (Millions)	Total Cost for Scenario C (Millions)*
$17,036	**$22,858**

*The total cost is equal to the Regional funding level + the Local funding level

APPENDIX D

REGIONAL TRANSPORTATION GOALS, OBJECTIVES AND PERFORMANCE MEASURES

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Goals

A goal is a general statement of purpose that represents a long-term desired state of affairs. It is generally measurable by qualitative means. By identifying broad goals that are both visionary and practical, and that respond to the values of the region, the focus of the planning process can be more readily communicated to the public. The goals, in turn, can be defined in greater detail by specifying multiple objectives for each goal.

Objectives

An objective is very similar to a goal, as it represents a desired end state of affairs. However, an objective is an intermediate result that must be realized to reach a goal. The definition of an objective is usually more focused than that of a goal and is typically more subject to being measured. Objectives were identified for each of the transportation goals.

Performance Measures

Performance measures will be applied in the scenarios evaluation phase of the RTP process. In the evaluation of scenarios**,** the values for the performance measures will be used to assess the relative strengths and weaknesses of the scenarios, and help provide insights into the tradeoffs associated with different transportation investment strategies. This will be done within the overall context of regional transportation goals and objectives.

Goals/Objectives/Performance Measures

The listing below presents the full array of goals, objectives and performance measures that will be use to help guide the preparation of the RTP. The goals are not listed in priority order and are label numerically for reference purposes. Objectives are listed under the goals to which they apply and performance measures are shown under the transportation objective for which they will provide information.

Performance Measures by Goal and Objective

Goal 1: System Preservation and Safety

Transportation infrastructure that is properly maintained and safe, preserving past investments for the future.

Objective 1A: Provide for the continuing preservation and maintenance needs of transportation facilities and services in the region, eliminating maintenance backlogs.

Performance Measures:

Percent of maintenance and preservation needs funded.

Objective 1B: Provide a safe and secure environment for the traveling public, addressing roadway hazards, pedestrian and bicycle safety, and transit security.

Performance Measures:

Accident rate per million miles of passenger travel.

Goal 2: Access and Mobility
Transportation systems and services that provide accessibility, mobility and modal choices for residents, businesses and the economic development of the region.

Objective 2A: Maintain an acceptable and reliable level of service on transportation and mobility systems serving the region, taking into account performance by mode and facility type.

Performance Measures:

Travel time between selected origins and destinations.

Peak period delay by facility type and geographic location.

Peak hour speed by facility type and geographic location.

Number of major intersections at level of service "E" or worse.

Miles of freeways with level of service "E" or worse during peak period.

Objective 2B: Provide residents of the region with access to jobs, shopping, educational, cultural, and recreational opportunities and provide employers with reasonable access to the workforce in the region.

Performance Measures:

Percentage of persons within 30 minutes travel time of employment by mode.

Objective 2C: Maintain a reasonable and reliable travel time for moving freight into, through and within the region, as well as provide high-quality access between intercity freight transportation corridors and freight terminal locations, including intermodal facilities for air, rail and truck cargo.

Performance Measures:

Average daily truck delay.

Objective 2D: Provide the people of the region with transportation modal options necessary to carry out their essential daily activities and support equitable access to the region's opportunities.

Performance Measures:

Jobs within one-quarter mile distance of transit service.

Percentage of major arterial streets that have bike lanes.

Percentage of regional connectors funded as part of the number of miles of off-street bike/pedestrian system plan.

Objective 2E: Address the needs of the elderly and other population groups that may have special transportation needs, such as non-drivers or those with disabilities.

Performance Measures:

Percentage of workforce that can reach their workplace by transit within one hour with no more than one transfer.

Note: There will also be a separate Title VI and Environmental Justice analysis.

Goal 3: Sustaining The Environment
Transportation improvements that help sustain our environment and quality of life.

Objective 3A: Identify and encourage implementation of mitigation measures that will reduce noise, visual and traffic impacts of transportation projects on existing neighborhoods.

Performance Measures:

Per Capita VMT by facility type and mode.

Total transit ridership.

Objective 3B: Encourage programs and land use planning that advance efficient trip-making patterns in the region.

Performance Measures:

Households within one-quarter mile of transit.

Transit share of travel (by transit sub-mode).

Objective 3C: Make transportation decisions that are compatible with air quality conformity and water quality standards, the sustainable preservation of key regional ecosystems and desired lifestyles.

Performance Measures:

Households within five miles of park-and-ride lots or major transit centers.

Amount of pollutant emissions by type (NAQS).

Goal 4: Accountability and Planning
Transportation decisions that result in effective and efficient use of public resources and strong public support.

Objective 4A: Make transportation investment decisions that use public resources effectively and efficiently, using performance-based planning.

Performance Measures:

Travel time benefits of transportation investments compared to the public costs.

Objective 4B: Establish revenue sources and mechanisms that provide consistent funding for regional transportation and mobility needs.

Performance Measures:

Percent of state and federal transportation taxes collected in Maricopa County that are returned to the region.

Objective 4C: Develop a regionally balanced plan that provides geographic equity in the distribution of investments.

Performance Measures:

Geographic distribution of transportation investments.

Objective 4D: Recognize previously authorized corridors that are currently in the adopted MAG long range transportation plan; i.e., Loop 303 and the South Mountain Corridor.

Performance Measures:

Inclusion of committed corridors.

Objective 4E: Achieve broad public support for needed investments in transportation infrastructure and resources for continuing operations of transportation and mobility services.

Performance Measures:

Voter approval for a regional transportation revenue source.